

The New England JOURNAL of MEDICINE

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10 Domestic \$6 per Annum 25c per Copy
15 Canada \$7.04 Foreign \$8.52

APRIL 12 1934

Published Weekly in Boston
7 1/2 The Fenway

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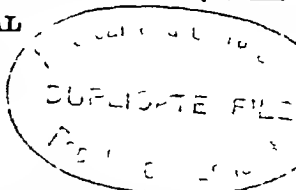
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OWNED AND PUBLISHED BY THE MASSACHUSETTS MEDICAL SOCIETY

Volume 210 Domestic \$6 per Annum 25c per Copy
Number 23 Canada \$7.04 Foreign \$8.52

JUNE 7, 1934

Published Weekly in Boston
at 8 The Fenway

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Vol. 210 Domestic \$6 per Annum 50c per Copy
No. 24 Canada \$7.04 Foreign \$8.52

JUNE 14, 1934

Published Weekly in Boston
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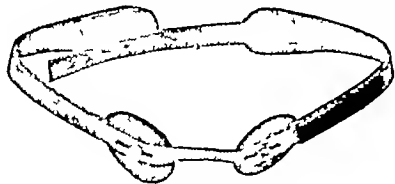
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APRIL 5, 1934

NUMBER 14

COMPLETE ABLATION OF THE THYROID GLAND IN A CASE OF CHRONIC LYMPHATIC LEUKEMIA WITH HYPERMETABOLISM*

BY WILLIAM DAMESHEK, M.D.,† DAVID D. BERLIN, M.D.,‡ AND HERRMAN L. BLUMGART, M.D.†

NUMEROUS investigators, in particular Minot and Means¹ and Friedgood², have commented on the striking resemblance which frequently exists between the symptoms of hyperthyroidism and those of chronic lymphadenosis (lymphatic leukemia). The symptoms of irritability, agitation, hyperactivity, asthenia, increased sweating, and loss in weight, associated with a warm, moist skin, a rapid pulse, and fine tremor of the hands are identical in both conditions. Whether these symptoms are dependent entirely upon the marked elevation in basal metabolic rate usually present in both diseases, or whether other more fundamental factors are operative is not certain. Krantz and Riddle³ stressed the importance of determining the basal metabolic rate as a guide to x-ray treatment in lymphatic leukemia, and pointed out that this test frequently gave a truer indication of the condition of the patient than the leukocyte count. They noted that the beneficial response which occurred following x-ray treatment was usually correlated with the resultant fall in metabolic rate.

The following case report deals with a patient who presented the typical features of chronic aleukemic lymphadenosis ("aleukemic lymphatic leukemia") and showed a basal metabolic rate of +65 per cent. It was thought that the symptoms she presented of extreme irritability, agitation, hyperactivity, asthenia, marked weight loss, drenching sweats, and palpitation might be directly dependent upon the elevated metabolic rate. When these symptoms became extreme, and the signs of beginning circulatory failure (edema of the legs, hydrothorax) developed, it was felt that complete thyroidectomy might offer the prospect of at least symptomatic improvement, especially since rest in bed, Lugol's solution and x-ray treatment of the lymph-nodes and spleen had proved of no value. This operative procedure, which has been found to be of definite value in reducing permanently the metabolic rate in over 60 cases of severe heart disease in this hospital, was accordingly done. The

striking effects which followed—in this first recorded complete thyroidectomy for leukemia—are the subject for the following case report.

REPORT OF CASE

Rose K., B. I. H., 18314 a 42 year old American Jewish housewife entered the Beth Israel Hospital on May 9, 1933, complaining of marked loss of weight. Her father had died at the age of 44 of carcinoma of the stomach. Two children were living and well, one child died in infancy from diphtheria. The patient had always been well except for attacks of 'bronchitis', which had occurred annually during the past three years. In 1926 she had weighed 130 lbs. In 1932, she weighed 125 lbs., but during the year before entry she had lost 12 lbs. Until the winter of 1932 she had considered herself well. At that time she suffered a severe attack of "grippe" associated with bronchitis. She recovered from this illness, but beginning in April 1933 she began to feel poorly although she had no specific complaints. In the latter part of the same month she noticed a large lump in her left groin and slight swelling of the left leg. She became increasingly nervous and lost weight, although her appetite remained good. She finally came to the out patient department of the hospital and was referred to the house medical service for study.

Physical examination on admission revealed a tall, thin garrulous hyperactive woman who appeared somewhat euphoric. The face was somewhat flushed, the skin warm and moist. The mucous membranes showed slight pallor. The edge of the liver was felt three fingersbreadth below the right costal margin extending well over toward the left of the midline. The spleen was greatly enlarged occupying the entire left upper quadrant of the abdomen. Its lower edge was felt below the level of the umbilicus and its upper edge could be percussed high up in the left axilla. The peripheral lymph nodes throughout the body were greatly enlarged. They were for the most part discrete, elastic, firm and non tender. The cervical nodes were very numerous and could be felt in the posterior and anterior cervical triangles and at the angles of both jaws. They were usually the size of large beans but several were walnut sized. The axillary nodes were very large especially in the left axilla where one of them was the size of a small orange. Conglomerate masses of nodes were present in both inguinal regions particularly on the left, where a large mass of about the size and shape of a pear was felt. This mass was very hard and firm and appeared to be adherent to the underlying structures. The epitrochlear nodes could not be felt. The left leg showed slight pitting edema. The rest of the examination, including that of the heart and lungs, was entirely normal.

The laboratory data on admission were as follows: the urine showed a "r.s.t." of albumin, the sediment being normal. Hemoglobin (Sahli) was 60.

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per cent, red blood cell count 438 millions, white blood cell count 9,000 per cu mm. Differential count of the white cells showed polymorphonuclear cells 34 per cent, lymphocytes 58 per cent, monocytes 7 per cent, eosinophiles 1 per cent. Most of the lymphocytes were of the immature or large type, and 12 per cent of the total white cell count was composed of lymphoblasts. The red blood cells showed slight hypochromia and slight change in size and shape, the blood platelets were normal. Blood non protein nitrogen was 35 mgs per 100 cc. Icterus index 6, blood cholesterol 153 mgs per 100 cc. The Wassermann, Kahn, and Hinton tests were negative. The basal metabolic rate fluctuated between +42 per cent and +61 per cent. An x ray of the lungs showed prominent, lobulated hilar nodes. X rays of the spleen were taken following the administration of 75 cc of a colloidal solution of thorium dioxide intravenously. The lower border of the spleen extended to within a few centimeters of the posterior crest of the ilium. The right lobe of the liver appeared to be increased in size and slightly low in position.

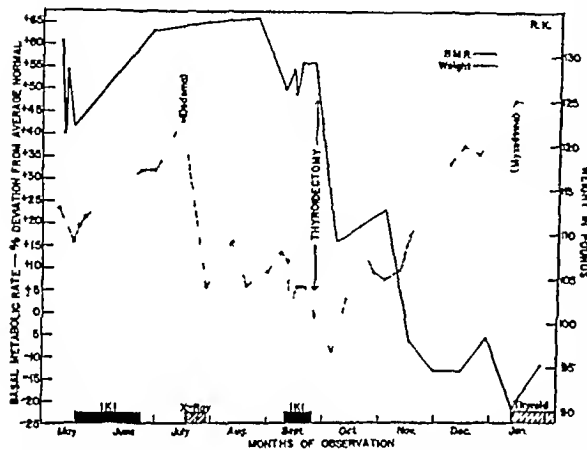


FIGURE 1 Chart illustrating the effect upon the basal metabolic rate and the body weight of compound solution of iodine x ray treatment and total ablation of the thyroid gland

The clinical diagnosis of chronic lymphatic leukemia (aleukemic) was made on the basis of the symptoms of weakness and loss of weight, the physical signs of generalized lymphadenopathy and splenomegaly, and the definitely abnormal blood picture which showed an absolute increase in the number of lymphocytes with the appearance of many immature lymphocytes and lymphoblasts. The hypermetabolism was considered to be associated with the leukemic process.

A sternal bone marrow biopsy was done. This was essentially negative and showed but little infiltration with cells of the lymphoid series. The ratio of nucleated red blood cells to white blood cells was 0.5 to 1 (normal about 1 to 1). Differential count of the bone-marrow white blood cells showed the following: mature polymorphonuclears 35 per cent, metamyelocytes 64.5 per cent, myelocytes 24.5 per cent, myeloblasts 10 per cent, histiocytes 15 per cent, and lymphocytes 5.0 per cent.

Biopsy of one of the axillary lymph nodes on microscopic examination by Dr. Monroe J. Schlesinger showed the node to be largely run over and replaced by a single type of cell. Although the sites of many of the lymphoid follicles can still be made out by the arrangement of the stroma the cells in these areas do not show the orderly arrangement of germinal centres surrounded by

lymphoid cells. Instead the whole area is a solid mass of the same type of cells found throughout the node. These replacing cells also stuff the peripheral and other sinuses and are found infiltrating the capsule. This capsular infiltration is continuous with the underlying infiltration. The infiltrating cells have large, pale, vesicular, irregularly shaped nuclei with a sharply cut nuclear membrane, and often one or more definite nucleoli. The cytoplasm of these cells is less obvious, but consists of a narrow, irregular rim, which is slightly basophilic and has no definite cell membrane. Mitotic figures are found throughout and also a rare cell with a multilobed large nucleus resembling a giant cell nucleus. There is no definite increase in fibrous tissue and no areas of necrosis. Diagnosis: malignant lymphoblastoma, possibly lymphatic leukemia.*

The patient remained in the hospital on her first admission from May 9 to May 23, 1933. Her temperature ranged between 98 and 99.5° F, her pulse between 80 and 100 per minute. She weighed 113 lbs on admission, 112.5 lbs on discharge. On May 18, the administration of compound solution of iodine was begun in a dosage of 10 minims three times daily. This was continued throughout the remainder of the patient's stay and for a month following discharge. The patient was discharged to a convalescent home, where she remained for a month. There had been no change in her condition while she was in the hospital.

She returned to the Blood Clinic on June 23, 1933. She was still extremely hyperactive and complained of extremely distressing sweats usually nocturnal, and drenching in type. There had been some slight gain in weight, but the metabolic rate was still markedly elevated (+63 per cent) despite the continued administration of Lugol's solution. On July 14 the cause of her continued gain in weight to 123 lbs despite the tachycardia (120 per minute) and the hypermetabolism was found in marked pitting edema of both legs. It was felt at this point that the chief symptoms in this case were due to the markedly elevated metabolic rate leukemic in origin, to be sure, but bringing about, none the less an actual "burning up" or dissipation of the patient's energies and possibly causing some degree of cardiac decompensation. The possible presence of a hyperplastic thyroid gland was also considered. The possibility of alleviating these symptoms and thus preventing future damage to the myocardium by complete ablation of the thyroid gland suggested itself. After considerable discussion it was decided that x-radiation over the lymph nodes and spleen should first be instituted. If this proved unsuccessful in alleviating the patient's hypermetabolism and her associated symptoms, thyroidectomy might then be done. She was accordingly given a series of deep x-ray treatments in the X-ray Department under the supervision of Dr. Harry F. Friedman. Six ten minute treatments over the spleen (80-100 roentgen units) were given and followed by three ten minute treatments over the anterior chest of 100 roentgen units. These treatments were given on successive days beginning July 17 and concluding July 28.

On July 21 her weight was 112 lbs, a loss of 11 lbs in one week and examination disclosed almost complete absence of edema of the legs. On July 28 she weighed 104.5 lbs and the basal metabolic rate was +65 per cent. She seemed a little better on August 11 but her pulse was still 120 per minute, and the lymph nodes, spleen and liver showed no

*It may be noted that Dr. Schlesinger includes under the diagnosis of "malignant lymphoblastoma" both lymphosarcoma and lymphatic leukemia. He maintains that by microscopic section alone without knowledge of the blood it is impossible to distinguish from examination of a single lymph node between lymphatic leukemia and lymphosarcoma.

essential change from previous examinations. Blood studies showed very little change except for slight leukopenia (5000 per cu mm). In September, she felt and looked very badly, was extremely nervous, irritable, hyperactive, and was again showing edema of the legs. She was finally readmitted to the House on September 8, 1933.

active, and rapid and a soft, blowing systolic murmur could be heard over the entire precordia. Generalized lymphadenopathy was present as described in previous examinations. No diminution in size had occurred. If anything most of the nodes were large. There was pitting edema of both legs, especially marked in the left. Blood pressure was 120

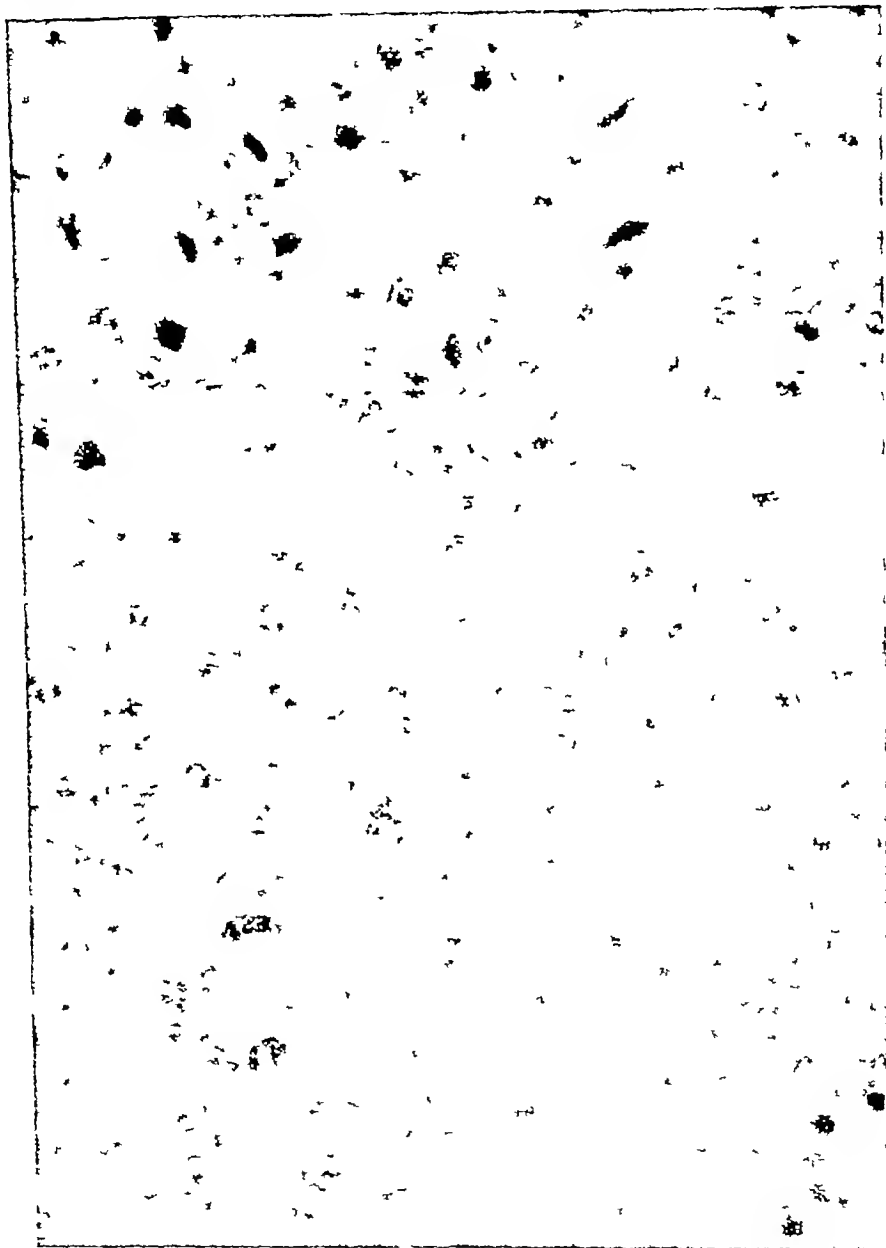


FIGURE 2. Photomicrograph of section of lymph node removed at biopsy. $\times 900$. Note the effacement of the normal architecture of the node with extensive proliferation of primitive lymphocytes typical of lymphadenosis (lymphatic leukemia).

Examination at this second admission showed a markedly emaciated hyperactive woman moving about very restlessly in bed. The skin was very warm and moist. There was no exophthalmos nor lid lag. The thyroid gland was not palpable. There was dullness and diminished tactile and vocal fremitus at the bases of both lungs probably due to fluid. The heart sounds were very loud hyper

systolic, 65 diastolic mm Hg. An x-ray of the chest disclosed an area of dullness and obliteration of the costophrenic angle at the right base interpreted as lesion at the right lower lobe with probably a small amount of fluid, of leukemic infiltration. X-rays of the abdomen showed that the liver and spleen were larger than on previous examinations. The urine was normal except for many leukocytes.

on one occasion. An electrocardiogram was normal except for slight right axis deviation. The blood at this time showed a definite though slight anemia together with a leukopenia. The hemoglobin ranged between 55 and 60 per cent, the red blood cell count between 3.04 and 3.80 millions, and the white blood cell count between 2400 and 5200 per cu mm. The basal metabolic rate was still strikingly elevated ranging between +48 and +56 per cent, and the blood cholesterol content was correspondingly low 101.112 mgs per 100 cc. Again, no drop in metabolic rate followed the administration of Lugol's solution.

On September 26, 1933, total ablation of the thyroid gland under gasoxygen anesthesia was per-

metabolic rate was +16 per cent. On October 20, she weighed 109 lbs, and her pulse was 80 per minute. Although she was still quite nervous and excitable, she seemed much quieter. She said she felt stronger and was pleased at the complete loss of palpitation, which had been so annoying before operation. She continued to have profuse night sweats. On examination, she was definitely less agitated, and the lymph nodes seemed perceptibly smaller. Basal metabolic rate was +19 per cent.

For the next month, until November 17, the clinical course was irregular. There was no further gain in weight, in fact there was a slight loss—and there was no further drop in basal metabolic rate (+23

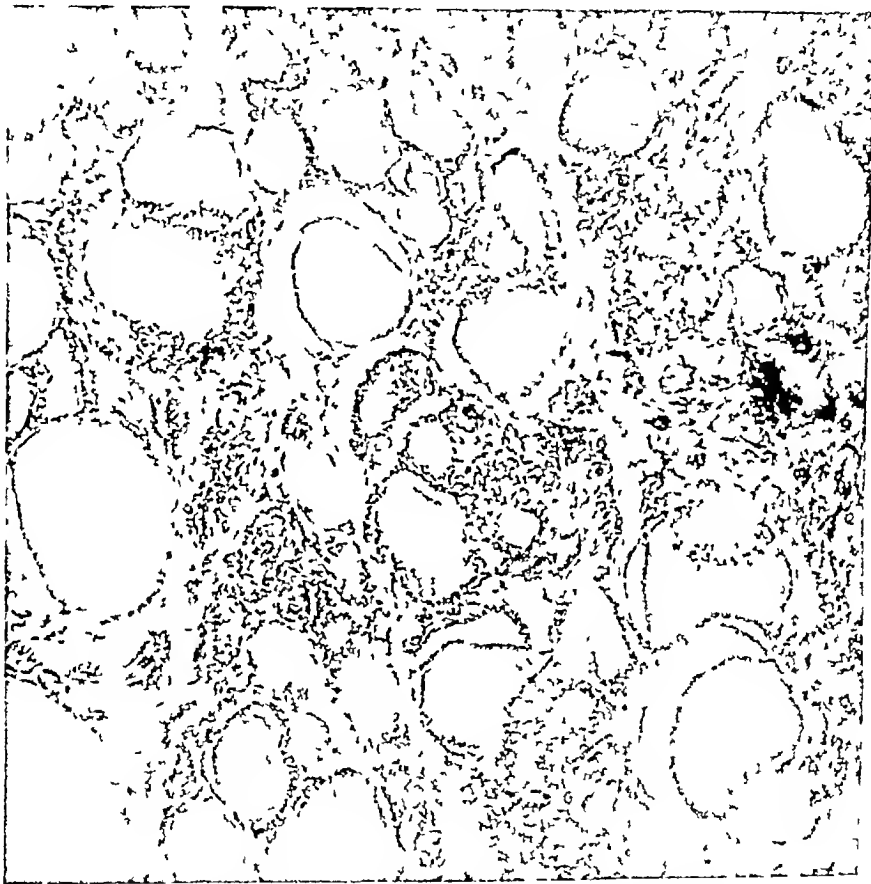


FIGURE 3 Photomicrograph of section of thyroid gland removed at operation. $\times 118$ Note the normal structure of the thyroid acini

formed by Dr. Berlin. The same technique was used as described in previous papers on total thyroidectomy in severe cardiac disease.^{1,2} The postoperative course proved essentially uneventful.

The complete thyroid gland at removal weighed 145 Gm. We are again indebted to Dr. Schlesinger for the following description of the gross and microscopic appearance of the gland: "The outer surface had a grayish pink to purple appearance. Microscopic examination revealed thyroid tissue in which the acini are uniform in size, shape, and distribution. They are lined by a flattened layer of cuboidal epithelium, and the lumina are filled with uniformly staining colloid material. There is no particularly noticeable infiltration of lymphocytic or other types of cells, and there is no evidence of hyperplasia."

Eleven days after operation (October 7) the basal

metabolic rate was +16 per cent on November 2). However, on November 17, she presented herself at the Blood Clinic and maintained she felt "wonderfully well." She was much quieter, and her sweats had entirely ceased. She had gained 4 lbs since the preceding week, and the metabolic rate showed a marked drop to -6 per cent. The lymph nodes of the neck were barely palpable, and the axillary and inguinal nodes had diminished about 50 per cent in size. The spleen was felt three fingersbreadth below the left costal margin and appeared to be about one-half of its previous size.

From that time until the present, there has been continued and striking improvement. Gain in weight continued at the rate of 3.5 lbs per week. The metabolic rate fell to -13 per cent on December 1 and to -22 per cent on January 12, at which time small doses of thyroid extract were administered.

The blood cholesterol has risen from its pre-operative low of about 100 to its present value of about 290 mgs per 100 cc. There is no further sweating, the patient usually feels somewhat cold and her skin has become rather dry and coarse. The symptoms of full blown myxedema developed about three months after operation when the metabolic rate fell to -22 per cent.

The most striking findings, however, are those referable to the lymph nodes, spleen, and liver. At the present writing the cervical and axillary lymph nodes have completely disappeared and the large

the metabolic rate reached a level of -6 per cent. Palpitation of the heart ceased earlier. The last and most distressing symptom to leave was the severe drenching night-sweat. Despite the development of clinical myxedema at a metabolic level of -22 per cent, the patient said she felt better than she had for years.

2 Signs

The signs referable to the circulation were the first to become modified. Blumgart⁶ has demonstrated the interdependence of the velocity of blood flow with the basal metabolic rate, and upon this basis rests the concept of the amelioration of the symptoms of cardiac failure by thyroidectomy.^{4 (a) (b) 7} The pulse in our case, averaging 120 per minute before operation, rapidly diminished as did the fluid in the right pleural cavity.

The warm moist skin gradually became dry and somewhat coarse. The patient herself changed from an agitated and incoherent person to a softly-spoken, apparently calm individual. The peripheral lymph-nodes gradually became smaller in size until finally even the hard masses of inguinal nodes became difficult

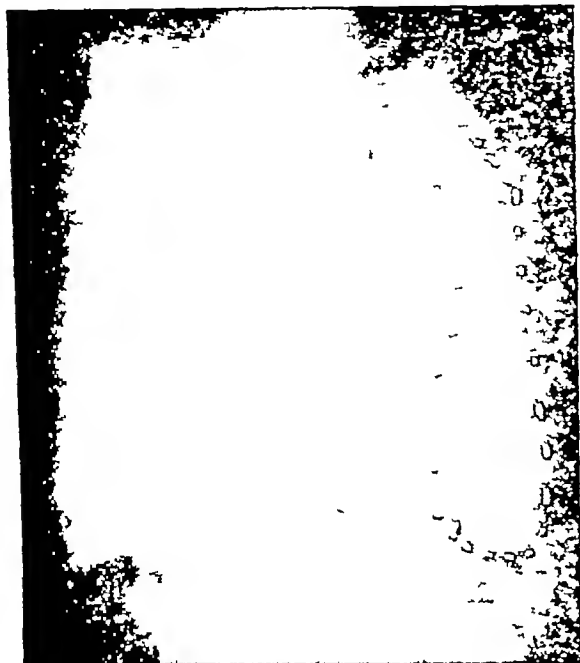


FIGURE 4 Roentgenogram of abdomen September 11, 1933. Colloidal solution of thorium dioxide had been given in May 1933 and the spleen and liver continued to show the presence of "thorotrast." Note the extremely large size of both the liver and spleen; the latter organ extending almost to the pelvic brim.

masses of inguinal nodes have diminished about 90-100 per cent in size. Simultaneously, the spleen has become strikingly diminished in size and can now be felt just below the left costal margin. This is well brought out in the x-rays of the abdomen.

The blood findings during this period (September 26, 1933; January 12, 1934) have shown slight though progressive improvement. There has been gradual amelioration of the anemia, although neither iron nor liver was given, and the leukocyte count has slowly but steadily risen. The differential count has shown a gradual approach to a more normal formula, and the lymphoblasts have entirely disappeared.

COMMENT

A. Results

The results which followed complete removal of the thyroid gland in this case of chronic aleukemic lymphadenosis with hypermetabolism are analyzed below.

1 Symptoms

The extreme agitation, hyperirritability, over-excitement, and insomnia all disappeared when



FIGURE 5 Roentgenogram of abdomen December 15, 1933. Note that the spleen has been reduced markedly in size, extending only a short distance below the left costal margin. The liver also has been definitely reduced in size.

to feel. The spleen, which had occupied almost the entire left half of the abdomen, rapidly became smaller when the metabolic rate reached -6 per cent, and within six weeks had regressed so that it could be felt just below the left costal margin. A myxedematous facies was finally noted about three months after operation, at which time the metabolic rate was -22 per cent and the patient had gained about 25 lbs in weight.

3 Basal Metabolism

The basal metabolic rate before operation fluctuated between +42 per cent and +65 per cent (figure 1). Slight diminution in rate occurred during the patient's first admission to the hospital following several days' rest in bed. Lugol's solution was given in dosage of ten minims three times daily for a period of three weeks during and following her first admission, and for two weeks during her second admission. No diminution in rate occurred on either of these occasions, in fact, the metabolism appeared to increase definitely during the first period of treatment with Lugol's solution. This is contrary to the experience of Friedgood.²

X-ray treatments given almost daily for eleven days in a total dosage of 880 roentgen units over the spleen, lymph-nodes and mediastinum caused no diminution in metabolic rate. It is, to be sure, possible that diminution in rate might have occurred with further x-radiation, it was felt, however, that the patient's progressively downhill course militated against continued therapy.

Striking drop in metabolic rate to +16 per cent occurred eleven days after operation. For about two months, there was no further change, at which time a sharp drop to -6 per cent and -13 per cent took place. Another two months passed without further change, when a further drop to -22 per cent was noted. At this time, the patient presented all the clinical features of myxedema, and it was decided to give small doses of thyroid.

4 Blood Cholesterol

The cholesterol content of the blood in this case varied inversely with the basal metabolic rate. With the highest metabolic readings, values of 100-112 mgs per 100 cc were obtained. Following thyroidectomy, gradual rise took place, so that two and a half months after operation, when the basal metabolic rate was -13 per cent, the blood cholesterol was 292 mgs per 100 cc. These findings conform to the observations of Hurxthal³ who showed that the blood cholesterol content is low with hyperthyroidism and high in myxedema.

TABLE I
HEMATOLOGICAL DATA

Date	Hemo- globin %	RBC * (millions) (per cu mm)	WBC (per cu mm)	Blood Platelets (per cu mm)	P %	Total L %	'Blasts %	M %	E %	B %
5-6-33			10,000		29.5	59		10	15	
5-9	80 (T)	5.14	9,900		34	58	12	7	1	1
5-10			7,400		30	67	15	2	1	
5-12			8,300		30	61	4	7	2	
5-18	61 (S)	4.88	7,800		36	54	8	8	1	1
5-20			8,100							
6-30			4,450		32	50	10	15	3	
7-14	64 (S)	4.32								
7-21			5,270		41	38	12	21		
8-11	60 (S)	4.44	5,000							
9-8		3.32	2,500		41	57	20	1	1	
9-11			3,800							
9-12	55 (S)	3.42	3,600							
9-13					16	52	9	31		1
9-16	60 (S)	3.30	3,200							
9-20		3.50	2,400							
9-27			3,600		57	34		7		2
9-28			3,800		57	41	7	1	1	
9-29			3,500		59	35	2	4	2	
10-1	50 (T)	3.15	4,200							
10-2			4,100		64	34	1	1	1	
10-3			6,800		49	47		3	1	
10-4			4,800		55	40		3	2	
10-5			4,100		59	37		3	1	
10-14		3.57	4,400		54	41		5		
10-20		3.38	5,000							
10-27			5,100		51	29		15	2	3
11-10	56 (S)	3.29	4,400	259,910	46	41		13		
11-17	57 (S)		3,300		58	34	4	10		
12-1	66 (S)	3.48	4,800	226,200	58	36		6		
12-8	66 (S)	3.14	5,400	185,260	42	45		9	3	1
12-15	62 (S)	3.63	4,800		40.5	39		10.5	9.5	0.5
12-22	70 (S)	3.82	6,500							
1-12-34	67 (S)	3.76	5,000							
1-19	70 (S)	4.63	4,285	185,000	29	56		10	4	1
1-26	75 (S)	4.99	4,650	229,000	47.3	39.3		8.7	5.7	
2-2	71 (S)	4.32	4,600	233,280						

*RBC=Red blood cells
WBC=White blood cells
P=Polymorphonuclear cells

L=Lymphocytes
'Blasts=Lymphoblasts
M=Monocytes

E=Eosinophiles
B=Basophiles

5 Blood Cells

The cellular constituents of the blood are presented in table 1. When the patient first presented herself at the hospital there was slight hypochromic anemia together with normal leukocyte and platelet counts. Differential count of the white blood cells disclosed a marked increase in the absolute number of lymphocytes and monocytes with the appearance of many lymphoblasts and histiocytes. As the patient's illness increased in severity the anemia increased and became normocytic and the leukocytes and blood platelets became much diminished. Lymphoblasts were consistently present. Following operation, there was gradual rise in red cell count (without iron or liver therapy) to 4.90 millions together with rise in leukocytes to about 6000 per cu mm and rise in the number of blood platelets. The lymphoblasts disappeared completely two and a half months after operation, although there was a continued lymphocytosis with the presence of many large lymphocytes. At this time, coincidental with the rapid regression in size of the lymph-nodes and spleen several lymphocytes showing extreme vacuolization of the cytoplasm were seen. It was thought that they might represent lymphocytes which had become deteriorated in the nodes and had appeared in the peripheral blood. Krantz and Riddle³ noted that "there was a definite tendency for the large lymphocytes and immature lymphocytic cells to increase as the heat production rose" and to diminish with diminution in metabolic rate.

B Theoretical Implications

It is not our purpose in this preliminary report of a single case to enter into any extensive discussion regarding the numerous theoretical speculations which are of interest. Minot and Means¹ and Friedgood² have adequately discussed the often striking resemblances between hyperthyroidism and chronic lymphatic leukemia. Friedgood² feels that the elevated basal metabolic rate of both diseases is intimately related to the sympathetic nervous system. Most investigators however conclude that the increased heat production in hyperthyroidism is due to the action of an excess amount of active principle liberated by a hyperplastic thyroid gland and that the hypermetabolism of leukemia is due to the increased metabolic activities of proliferating white blood cells. This question is not settled by the results which followed thyroidectomy in our case.

The regression in size of the lymph-nodes and spleen which followed thyroidectomy may have been spontaneous although it was felt that this possibility was unlikely since such extreme regression had never before been noted in our experience. It might have been the result of

x-radiation although this is rendered unlikely because diminution in size did not occur for almost five months following this form of therapy. That it was due to the injection of thiothorast is also unlikely because other investigators, principally Zadek¹⁰, have reported on the inefficacy of this form of treatment in chronic lymphatic leukemia. The possibility was considered that the diminution in size and presumably in the degree of proliferation of lymphoid tissue was the direct result either of the fall in basal metabolism or of the lack of the growth-promoting influence of the thyroid secretion.

Answers to these questions may appear when more cases are studied. In this paper it is our object to present the results which followed thyroidectomy in a case of chronic lymphatic leukemia with hypermetabolism in the hope that others may be prompted to utilize the same procedure in similar cases and record their observations.

SUMMARY

A woman aged 42 with the signs of chronic aleukemic lymphadenosis ("aleukemic lymphatic leukemia") presented a basal metabolic rate of +65 per cent. It was thought that the continued loss in weight, profuse drenching sweats increasing nervous symptoms and beginning circulatory failure might be due to the markedly elevated metabolic rate. When the patient became extremely ill and failed to respond to rest in bed, Lugol's solution and x-ray therapy, complete ablation of the thyroid gland was performed. Following this procedure the metabolic rate dropped strikingly, the clinical signs and symptoms of hypermetabolism disappeared as did the signs of circulatory failure, the patient gained weight, and the lymph-nodes and spleen regressed about 90 per cent from their original size. There was complete disappearance of all the patient's symptoms and the blood-picture became almost normal. Improvement has continued for five months after thyroidectomy was performed.

Remissions have been frequently reported in this disease and it seems conceivable that the events reported here are merely the expression of such remissions but the rapid onset of improvement after the treatment leads us to believe that the operation was at least partly responsible for the improvement.

We emphatically do not recommend this form of treatment for other types of malignant disease.

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PRESIDENT ELIOT'S RELATIONS TO MEDICINE*

BY WALTER B. CANNON, M.D.†

AT the Harvard University Commencement in 1909 an event occurred which was quite unprecedented. Two honorary degrees were given to one man. I remember vividly the sharp reaction of incredulous surprise which flashed over Mr. Eliot when, after President Lowell had conferred upon him the Harvard degree of Doctor of Laws, he again called his name and proceeded to bestow also the degree of Doctor of Medicine. In characterizing Mr. Eliot's services to medicine President Lowell symbolized the reforms which his predecessor had accomplished, by the expression, "Not in its buildings alone, but also in the instruction and research within its walls, he found the Harvard Medical School brick and left it marble." Through improvements which he made in our Medical School, however, President Eliot had a wide influence on medical instruction throughout the United States. It is proper, therefore, that we should recognize on this day of remembrance not only his local achievements but also the widely extensive influence of his policies and activities. In bringing before you his outstanding relations to our profession—his contributions to reform in medical teaching, to the advancement of dentistry, to the support of preventive medicine and public health, to the extension of western medicine into oriental countries, and to the freedom of medical research—I shall rely largely on his official reports and on speeches in which he advocated his views.

I

In order to appreciate the significance of President Eliot's vigorous and effective efforts at reform in medical education, we must understand as clearly as possible the status of affairs both in the world at large and in the medical

schools of this country, at the time of his entrance into the Presidency of Harvard University in 1869.

Two decades of the latter half of the 19th century had already nearly ended. That marvelous half-century, according to Osler, witnessed an application of the experimental study of physiology and pathology which did more to emancipate medical practice from the routine and thralldom of authority than all the work of all the physicians from the days of Hippocrates to those of Jenner—a period of nearly 2300 years. Just before those five decades of stupendous change had begun, ether had been proved a reliable anesthetic—a forward step which became, perhaps, quite as important for experimental medicine as it was for practical surgery. And although there had been other important steps forward in medical science before the discovery of general anesthesia, the stirrings and quickenings of the great advance began shortly thereafter. Claude Bernard, at Paris, and Carl Ludwig, at Leipzig, continued their brilliant discoveries in physiology, Bernard revealing the secrets of digestion and the nice control of the circulating blood by nerves, and Ludwig ingeniously inventing new methods, suggesting new ideas of bodily function, and stimulating scores of young men, who resorted to him from various countries, to undertake careers in medical research. Through his treatise on "Cellular Pathology," Virchow, in 1858, suddenly revealed an instructive way of regarding the processes of disease. A year later Darwin published "The Origin of Species," a book which had a most disruptive and fertilizing effect on biological thought and investigation. In 1865 Pasteur, by his examination of the causes of widespread death in silkworms, commenced the researches which illuminated the whole realm of infectious disorders and gradually brought about fundamental transformations in medical and surgical procedures. The first application

*A Memorial Address given at the Harvard Medical School on the Hundredth Anniversary of President Eliot's Birth.

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of Pasteur's ideas was known in 1867 when Lister published his classic record of two years' study on the avoidance of pus in wounds by applying what he called the "antiseptic principle." Meanwhile, investigations on metabolism had been undertaken by Voit and Pettenkofer, Villemin demonstrated that tuberculosis was transmissible, and Cohnheim was expounding his revolutionary observations on the inflammatory process. In short, the era of experimental medicine had been well begun, with its marvelous efflorescence of discoveries of the functions of organs and systems of organs, of the nature and causes of disease, and of rational modes of treatment. As time passed these fruitful efforts became organized in the sciences of experimental physiology and pathology, in biological chemistry, in bacteriology and immunology, and in the bedside applications of scientific methods to the practical problems of medicine and surgery.

In the presence of these stupendously important developments in certain European centers, what was the attitude of the teachers of medicine in the United States? So far as preparing students to become intelligent future practitioners of medicine was concerned, rendering them capable of understanding and appreciating the progressive spirit of their profession, it is clear that the teachers were as blind to the significance of events as if they had been living in the Dark Ages. The conditions which prevailed in the Harvard Medical School may be regarded as typical of and perhaps superior to the conditions generally found throughout the country. In his Annual Report of 1870-71 President Eliot described the mode of teaching which had prevailed previous to his administration. Let me quote his description,—

'The main strength of the body of teachers in an American medical school is spent upon long courses of lectures on the chief medical subjects which are given every year during from four to five months of the autumn and winter. At large medical schools these lectures are so numerous that the student who attends them all goes to five or six a day and of course remembers very little about any of them. The same lectures are repeated every year. The student who spends two winters in the same school pays twice for the same lectures. If he remain a third year he can attend them gratuitously. A candidate for the degree of Doctor of Medicine has been required to prove that he has attended somewhere two such terms of lectures, and one of these two in the institution at which he is seeking his degree. At the best schools a formal examination of candidates for the degree has been held but this examination has been private hasty and notoriously lax. A majority vote of the body of examiners admits the candidate to the degree so that the new doctor may be and frequently is utterly ignorant of nearly half the subjects of examination. It has been the pecuniary interest of the teachers composing a medical faculty to have as many pupils as possible and to grant as many degrees as possible their receipts being proportionate to the number of fees paid for attendance at lectures and for graduation. Finally the students to whom

this deplorable system of instruction has been applied, are, in the great majority of cases, persons of scanty preliminary training. Very few are graduates of colleges and very many are deficient in the elementary branches of what is called an English education. No medical school in the country would venture to publish uncorrected, one quarter of the theses which candidates for a degree present as one evidence of their attainments.

'It seems almost incredible that the grossly inadequate training above described should be the recognized preparation of aspirants to a profession which was once called learned, and which preeminently demands a mind well stored and a judgment well trained—a profession in which ignorance is criminality and skill a benefaction—a profession which penetrates the most sacred retreats of human love, joy, and sorrow, and deals daily with the issues of life and death.'

Such was the devastating criticism of medical education of that day which the new President outlined to the alumni of the University. The "notoriously lax" examination which he mentioned was conducted in the following manner. Nine professors representing nine different important subjects sat each at a table in the examination room. Nine students were admitted to the room in a group, and each sat down with a professor. At the end of ten minutes a bell rang and each student moved along to the next table. This process continued until at the end of ninety minutes all had been examined, whereupon they filed out. Each professor had a card, white on one side and marked with a black spot on the other. In order to secure the individual professional judgments, uninfluenced by conference, the Dean immediately called out separately the names of the students in the group, and after each name the professors simultaneously held up their cards,—the white side meaning approval the black spot disapproval. If five professors displayed the white side of the card, that is if the student was recognized as having passed five of the nine subjects on which he had been examined, he was granted the degree of Doctor of Medicine. Thus, at that time a young man could go forth from this School quite ignorant of four of the nine branches of medicine which he was supposed to use in his practice. I have heard from the lips of William James, who received his medical degree here in 1869, an account of his examination under this system. When he sat at the table with Oliver Wendell Holmes he was asked to describe the circle of Willis. James briefly mentioned its position and relations, whereupon Holmes remarked, "If you know that you know everything. Now, tell me all about the folks."

It is clear that an education of the character just described was not even remotely calculated to give insight into the revolution in medical science and practice that was already well along in its progress. Such an education had no gleam of true scholarship in any of its features. It

was utterly lacking in the close personal contacts of student with patient which are essential for training in effective practice. In the main it was neglectful of the methods and results of sound investigation, and oblivious of everything except the limited outlook of shortsighted teachers. It provided, therefore, instruction which resulted in supreme self-satisfaction and complacency,—an attitude negligent of, if not hostile to, new and important developments. An emphasis which was placed on a spurious "practicality" long prevented the adoption of modes of treatment, such as Listerism, for example which had proved elsewhere to be of the utmost practical benefit. In so far as the educational routine was not absurd it was perilously negligent of values of human life.

Obviously the stage was set for a reformer—one with strong convictions and great courage—and that, fortunately for the Harvard Medical School, was what President Eliot proved to be. In 1869, quite unheralded and for the first time in the history of the University, he broke the tradition of being only a nominal head of the School, and took his rightful place as presiding officer at the meetings of the Medical Faculty. Almost immediately his influence was felt, and when at one of the early sessions the dominant member of the faculty at the time, Dr Henry J Bigelow, asked why in a few months so many changes were proposed, whereas for eighty years the School had been running along smoothly and prosperously, the answer came—after a moment of dead silence—in the firm softness of President Eliot's voice, "I can tell Dr Bigelow the reason. There is a new President."

The establishment of respectable standards was argued against as being not only detrimental to the popularity of the School and therefore likely to affect unfavorably the professors' incomes, but as being vaguely detrimental to the chances of discovering the "born" physician and surgeon who might not be revealed unless the classes were large. Dr Bigelow declared that the young President was going to wreck the Harvard Medical School, it would soon cease to exist if his revolutionary plans were approved. "He actually proposes," said Dr Bigelow, "to have written examinations for the degree of Doctor of Medicine. I had to tell him that he knew nothing about the quality of the Harvard medical students, more than half of them can barely write. Of course, they can't pass written examinations." On his part, the "young President" did not flinch, nor did he mince his words. In his report for 1869-70, he wrote

The whole system of medical education in this country needs thorough reformation. The course of professional instruction should be a progressive one covering three years and the student

should give his attendance at lectures and recitations, at hospitals and laboratories, during the whole year. The Medical Faculty have been actively discussing these much needed changes, and will shortly rearrange their programme of instruction."

President Eliot's confidence that the new program would be adopted was doubtless based largely on his own sense of the righteousness of his cause and the power of his argument, but it rested also on the support which he received from a few members of the faculty who were convinced that reform was essential. Among these supporters were the Dean, Calvin Ellis, Dr James C White, Dr David W Cheever and, after he freed himself from the pressure of Dr Bigelow's thumb, as he explained, Dr Oliver Wendell Holmes. Even though the President was able to persuade the majority of the Medical Faculty and the Corporation to vote for the new regime, he still had to convince the Board of Overseers of the importance of the reforms, and so far as possible Dr Bigelow had been using his powerful influence to defeat the President's efforts in that body. There was doubt of the outcome. At a critical moment Mr Charles Francis Adams, ex-Minister to England and then Chairman of the Board, called another member to the chair, without intimating on which side of the controversy he was about to speak. Very simply, but with deep feeling, he told of a young graduate of our Medical School who had settled near his home in Quincy and whose attendance on workmen there had resulted in three mysterious deaths. After questions by an older practitioner the fact came out that the young man had, through ignorance, given fatal overdoses of morphine—a result of receiving his medical degree after passing only a majority of the subjects in which he had been examined. Mr Adams urged that it was high time that the proposed reforms were approved, and his pointed story carried the day.

Financially the new move was hazardous. The income of the School had depended wholly upon fees from students, and the raising of the time requirements for medical instruction to three years and the lengthening of each year from four months to the full academic period necessarily reduced the attendance. Repeatedly during the decade that followed there were appeals in the Annual Reports for financial aid. In 1871-72 President Eliot urged strongly the need for endowment.

"It would be difficult," he affirmed, "to overstate the importance of the effort which this single School is making, with no support except the approval of the profession, to improve the system of medical instruction in the United States. The ignorance and general incompetency of the average graduate of American Medical Schools at the time when he receives the degree which turns him loose upon the community, is something horrible to contemplate considering the nature of a physician's functions and responsibilities. The early mistakes of a young lawyer or a young minister are no great matter, not

much is staked upon his skill and wisdom and the community does not suffer irremediable losses and multiplied miseries if novices in these professions are left by the Schools in such a condition that they have to learn some pretty elementary lessons by practice. In the medical profession it is far otherwise. The mistakes of an ignorant or stupid young physician or surgeon mean poisoning maiming and killing or at the best they mean failure to save life and health which might have been saved, and to prevent suffering which might have been prevented. The effect upon the community of allowing the great mass of young physicians to learn the rudiments of their art by practicing it, can only be compared to the effect upon an army in the field of offering it with men who have to learn the elements of the art of war by practice in the face of the enemy. This comparison does not exaggerate the evils of the prevailing system of medical instruction in this country. The Harvard Medical School has successfully begun a revolution in this system. A liberal endowment of the School would insure the complete success of the undertaking and would encourage other schools to imitate the good example. There is no department of the University upon which money can be more worthily or more usefully bestowed none in which endowment funds would have more immediate or more lasting effects to advance learning and to relieve the sufferings and promote the happiness of mankind.

The financial troubles of the School were not rapidly resolved for about ten years later in his Report of 1880-81, the President was still urging the importance of generous support for medical education and research.

So long as medical schools he declared 'are conducted as private ventures for the benefit of a few physicians and surgeons who have united to form a corporation or a faculty the community ought not to endow them for it is contrary to the best interests of the public that medical education should be conducted in that way. The experience of the past hundred years in this country proves that such medical schools will not be endowed. The objects of endowment in medical education are precisely the same as in other departments of education namely to provide permanent means of securing the most competent persons for its professorial chairs of helping poor students of rare capacity, and of advancing knowledge by new researches. It is the primary object of medical science and art to defend and improve the life that now is—the life of the individual of the family and of society but since it is impossible to separate physical from mental and moral well being the domain of medical science is really co-extensive with human nature. Whatever motives influence benevolent persons to endow institutions which teach the humanities or theology should also avail for the endowment of medical education. The seed and the fruit, the planning and the harvesting may be different in kind but these various cultures all have in view a common end namely the improvement of man's highest state.

He once remarked "The first step towards obtaining an endowment is to deserve one." And in this same Report (1880-81) he was able to point with some pride to the fact that since 1871, when the Harvard Medical School ceased to be a private venture and became a constituent department of the University it had received by gift and bequests \$270,000.

President Eliot not only had great satisfaction in observing that the number of students gradually increased in spite of high standards, but was cheered by the adoption of the reforms made prominent at Harvard by other schools in the country. It is true that a graded course had been started earlier in the Chicago Medical School but the requirement was not strictly adhered to and the example was without noteworthy influence on the generally prevailing low standards. "The first real reform in American medical education" Garrison declares in his "History of Medicine" "was made in 1871 by President Charles W. Eliot of Harvard who raised the entrance requirements of the Harvard Medical School lengthened its curriculum to three years and graded it providing at the same time better facilities for clinical and laboratory instructions." The changes soon brought about an improvement of the quality of the students who entered on the study of medicine. In his Report for 1876-77 the President rejoiced in the possession of literary or scientific degrees by 44 per cent of the students an increase of nearly 90 per cent during the first seven years of his administration. And he rejoiced also that the University of Pennsylvania and the University of Michigan had to some extent followed the advances started at Harvard. He predicted that these actions meant the "speedy downfall of the old system of medical education." With extraordinary exactness he foresaw events.

"The schools connected with universities will abandon it (the old system) first" he prophesied "and the schools which are commercial ventures will do likewise when public opinion has so made itself felt on this subject that it will discredit a physician or surgeon to be connected with a school which admits to the profession rude ignorant and unskilful men." It was not until thirty-five or forty years later, however that this prediction came true when by abolition of the low-grade medical schools of the country, the number of schools was reduced from approximately 150 to approximately 85 because of the pressure of public and professional condemnation.

One receives a lasting impression of the continuity of a great institution such as Harvard University and the patience and persistence required of leaders who are eager to introduce improvements in its structure and customs by reading a series of the annual reports. Long before a change is adopted the suggestion of the change is clearly advocated and is as a rule repeatedly urged. In his Report for 1879-80 President Eliot outlined a plan for an elective fourth year in the medical curriculum, a year which would allow a better distribution of studies and a greater thoroughness of instruction—indeed instruction in small sections such that the student might have intimate contact with

patients The usual mode of teaching at the time was by means of clinical "exhibitions in large rooms appropriately called theaters" and "clinical visits in large groups" As the President described the method,

"The patient sits on a revolving table, and turning slowly around in the focus of a large amphitheater containing 300 or 400 students, supplies, it may be, an interesting illustration for a lecture, but affords the students only a very imperfect practice in that acute and accurate observation upon which the correct diagnosis of disease depends If it be said that it is impossible to give such personal instruction in a large school without a great number of clinical instructors, the answer is two-fold first, that the number of clinical instructors ought to be as large as the community can well supply and, secondly, that the University should be more concerned to have a very good school of medicine than a very large one"

These views resulted ultimately in the extension of the medical course by a required fourth year, and a long time later in the teaching of all students in small groups, and at a still later date in the development of clinical clerkships and the assumption of responsibilities for examining patients by the students themselves

Another illustration of the slow course of events is found in President Eliot's early reference to the limitations placed upon the Medical School because of the necessity of appointing as members of its clinical faculty men having positions in the Boston hospitals When a vacancy occurs in some clinical department, he wrote in his Report for 1888-89, "the question before the Governing Boards of the University is—not who is the best man for the place in Boston or elsewhere—but who is the most available man as a teacher among the Boston practitioners already holding cognate hospital appointments given by other Boards of Trustees, who in making their selection had teaching not at all in mind More than once this limitation of choice has proved unfortunate More than once the School and the community have lost an important medical reinforcement because the School was not in a position to offer to the desired person an adequate hospital appointment as well as a professorship"

Again we note a proposed reform which required many years for its actual achievement The criticism offered in 1888-89 was repeated frequently thereafter in comment and conversation Not until 1912, however, when Harvey Cushing was called to the Brigham Hospital from Johns Hopkins, and David L. Edsall of Washington University, St. Louis, was appointed in Medicine at the Massachusetts General Hospital, was the tradition broken and a practice begun which allowed the Medical School to offer clinical positions to the best men wherever they might be found in any part of the world

II

We turn now to a brief consideration of President Eliot's attitude toward those disorders of

the body which are the concern of the dentist He watched with care the developments of our Dental School, which had been established only a short time before the beginning of his administration Again his local interest had extensive effects In an address which he made in 1878, he took occasion to offer some rather strong advice to the members of the American Academy of Dental Science In doing so, he raised the question as to whether certain signs of anxiety among them, regarding the improvement of dental education and the raising of professional standards, should not be used to avert certain evils He pointed out that among such evils was the admission to the profession of thousands of "ignorant men attracted by its apparent profitableness, and debarred by no law, no established usage, and by no intelligent discrimination of the public against uneducated practitioners" Furthermore, he declared that it was not a favorable sign that the best literature on dentistry was to be found outside the United States, indeed, that only foreign dental literature showed any indication of scientific enthusiasm or disinterested devotion to study or to teaching He insisted that the dental schools throughout the country received only a small proportion of the men who entered the profession, and they set before their students standards of attainment which were much too low It is easy to recognize in this vigorous and straightforward attack on low standards of dental education a resemblance to the attitude which the President took when he faced the Harvard Medical Faculty in 1869 Indeed, he himself called attention to the precedents which the medical profession offered

"So young a profession as dentistry may well look, in searching for means of exalting the calling, to the experience of the elder profession of medicine. It cannot fail to be observed that one of the things which makes the profession of medicine a liberal profession is the zeal for scientific research which animates its representative men throughout their lives This admirable zeal to discover truth and to make it prevail, the profession of dentistry must emulate—indeed already emulates In this zeal is to be found, on the one hand, evidence that the profession is entitled to call itself liberal, and, on the other, security for steady growth and improvement."

He furthermore laid emphasis on the importance of following the example of the medical profession in offering gratuitous practice as a means of demonstrating with singular force the true liberality of the profession And he urged the establishment of gratuitous dental departments in public hospitals, children's asylums and reformatory schools, with the actual labor of such services falling chiefly upon young practitioners, who might, however, be supervised by older men And, finally, he pointed to a common attribute of good physicians and surgeons in their zeal for teaching "The constant desire and purpose on the part of its members

to teach, to impart to all any peculiar knowledge which each may acquire, is," he declared, "one of the principal distinctions between a liberal profession and a trade. Dentistry would have no claim to be called a liberal profession did not its practitioners manifest the zeal for teaching."

The words of advice which President Eliot uttered in 1878 expressed a policy which has characterized the Harvard Dental School for decades. No school in the University has had teachers who have shown a greater zeal for teaching and who have given to so great a degree, gratuitously, their services to the instruction of oncoming members of their profession. They have engaged, likewise, in the establishment and maintenance of what in a general hospital is known as an outpatient department—a place where persons unable to pay may receive free treatment. And in recent years there has been a growing interest in the application of methods of research to the solution of problems which the dentist is constantly meeting. It was very gratifying to President Eliot that these admirable qualities of character and these generous services were for many years quietly and modestly manifest in members of the Faculty of the Harvard Dental School. Repeatedly at meetings of the combined faculties of medicine and dentistry the President mentioned them with warm appreciation. And in one of his last public speeches, made at the Dental School in 1925, when he was ninety-one, he referred to the greatly improved standing of the dental profession among the professions as "one of the most striking changes in public opinion" that he had witnessed during his seventy years of observation of educational progress.

III

One of the many instances of the insight and persistence of President Eliot is found in his repeated urging of an interest in what may be called community medicine. In his Report of 1882-83 he wrote:

'The University has no professorship of public health or preventive medicine—a modern subject of great importance which can be properly dealt with only through an endowed professorship because the professor if properly devoted to his subject would be cut off from private practice. It would be a great service to humanity to divert even a tithe of the money annually given to charities of pauperizing tendency towards the promotion of medical teaching and research.'

Again the next year he drew attention to the desirability of a professorship of Hygiene and Public Health. This was an aspect of medicine which he repeatedly referred to and emphasized as the years passed. Only in 1897-98, however, did hygiene become for the first time in the history of the Medical School a required study. The course was largely concerned with the sani-

tation of our environment, with relatively little emphasis on the hygienic aspects of preventive medicine as applied biology. Indeed, it was not until the appointment of Milton J. Rosenau as Professor of Preventive Medicine and Hygiene, in 1909, that the students were really taught in the way in which President Eliot appeared to have dreamed in his early projections of plans for large-scale protection against disease. The clearest expression of these early views was voiced at the dedication of the new buildings of the Harvard Medical School in 1906. He then ventured to predict that in years to come medicine would "deal more extensively than in the past with preventive medicine, or in other words, with the causes of disease as it attacks society, the community, or the state, rather than the individual. The object in view will be not only to arrest or modify a malady which has appeared in the body of the patient, but, as in the recent case of yellow fever, to learn how the disease is communicated and how to prevent that communication. The study of mitigations, remedies and cures is to continue, but the study of the causes of disease and the means of prevention is to be greatly developed. The function of the nineteenth century physician will continue, and indeed will become more effective through a better knowledge of the forces which may be made to act upon his patient both from within and from without, but another sort of physician will be at work in the twentieth century preventing the access of epidemics, limiting them when they arrive, defending society against bad food and drink, and reducing to lowest terms the manifold evils which result from the congestion of population. The explorers and pioneers in medical science must be encouraged to press on their patient work of analyzing all the processes which accompany disease, in order that they may learn their actual sequences. Only through the knowledge of these sequences can real control over disease be certainly gained. And this work will be endless, for civilization involves constant changes in the environment of the human race, and it is on medical science that the race must depend for protecting it from the new dangers which accompany each novel environment. The medical scientists being provided and furthered, medical education must also train large bodies of men to clear and cultivate the regions through which the pioneers have made trails, or, in plainer words, to apply to millions of men and women in all sorts of climate and environment the discoveries of the scientists."

During President Eliot's eighty-fourth year, at a meeting of the Harvard Medical Alumni Association, he remarked:

One of the previous speakers alluded to my interest in preventive medicine. I have taken a strong interest in that branch of medicine because that

phrase covers an immense new service of the medical profession to the community, and much future happiness for the profession itself. To prevent evils and wrongs on a large scale by one's own personal wisdom and diligence gives even greater satisfaction than to cure individual cases of suffering from evils or wrongs, and the good done to the community by prevention is broader and ampler than the good done by curing."

The very important place which preventive medicine occupied in President Eliot's thinking is revealed by his allusion to it, in his address, "The Religion of the Future," as one of the prominent aspects of the service of man to his fellows. Among the social functions of religious activity he included the protection of humanity against suffering and disease, and especially the efforts of the medical profession directed toward applying medical science to the betterment of man's estate. "The men who do such things in the present world," he declared, "are ministers of the religion of the future."

IV

In the spring of 1907, a small group of students and recent graduates at the Harvard Medical School, who were considering how they could be of greatest service to humanity in the use of their professional training, conceived the idea of establishing a center for hospital practice and medical instruction in China. At the suggestion of Professor E. C. Moore, the proposal was brought to the attention of President Eliot, who consented to become the President of a Board of Trustees. On November 10, 1908, he addressed a letter to Drs. H. P. Wolcott and A. T. Cabot of the Harvard Corporation, to Drs. W. T. Councilman and H. A. Christian and myself of the Medical Faculty, and to Professor E. C. Moore of the Faculty of Arts and Sciences, asking us if we would serve with him on the Board. We all consented. In his letter the President wrote: "I believe the young men are thoroughly in earnest, and that it is a competent group. They propose to have small salaries for themselves—such as missionaries now receive—and to devote themselves wholly to teaching and gratuitous medical and surgical practice among the Chinese." On February 13, 1909, our Faculty of Medicine formally voted to approve and give moral support to the new enterprise.

In order to learn more exactly the conditions in China that would have to be met, Dr. M. R. Edwards, one of the group of young graduates, was sent there to make a survey. The information which he gathered pointed strongly to Shanghai as the best center for the location of a school. At a meeting of the Trustees in April, 1911, Dr. Edwards outlined the results of his trip and stated that enough money had already been assured to allow a favorable start toward realizing the plans. At that time Dr. M. J. Rosenau, Dr. W. S. Whittemore and Mr. Charles

Francis Adams were added to the Board of Trustees. In November, 1911, the venture was definitely launched, and four of the six members of the faculty were in Shanghai.

At that time President Eliot started on his trip around the world to study conditions which might be favorable to the establishment and the preservation of international peace. In the report which he submitted at the end of his trip, in 1912, he declared that the gift of Western medicine and surgery to the oriental populations would be one of the most precious things that Western civilization could do for the East. "To spread through the East," he wrote, "the knowledge of Western medicine and sanitation by building and conducting good hospitals, dispensaries, and laboratories for medical diagnosis, establishing boards of health, and providing defenses against plague, cholera, smallpox, and tuberculosis, is the surest way to persuade intelligent people in the East that they may expect much good from the inductive philosophy of the West acting in combination with the Christian religion in its simplest forms." And again, "Here, then, is a great gift that the West can make to China,—scientific medicine and surgery."

Any Western organization which desires to promote friendly intercourse with an oriental people can do nothing better than contribute to the introduction of Western medicine, surgery, and sanitation into China. The field for such beneficent work is immense, the obstacles to be overcome are serious but not insuperable and the reward in the future comparative well-being of the Chinese is sure. The Chinese people are too intelligent not to trace practical beneficence to its spiritual sources, and to draw all the just inferences." From these declarations it is clear that President Eliot returned from his journey well prepared to continue his interest in the venture undertaken by young Harvard medical graduates at Shanghai.

The Harvard Medical School of China continued in existence until 1917. The Rockefeller Commission, which, after studying the medical situation in China, reported in 1914, declared that the work of the School was "excellent," and praised in highest terms not only the arrangements for teaching but also the management of the small hospital which it controlled. The Commission advised that the Rockefeller Foundation establish a medical school at Shanghai, because of the population and wealth centered there, and it thus confirmed the judgment of those responsible for the location of the Harvard enterprise in that city. But the Great War changed all these generous projects. When by the clash of many nations conditions in this country and throughout the world became unsettled, it was difficult to raise the money required to keep the School developing as it should. In 1917, the Rockefeller Foundation agreed to take over the School, with the ex-

pectation then that it would become the nucleus of a new large medical center at Shanghai, as had been recommended. At the end of the War, however, the interests of the Foundation were involved in urgent European problems, and to the regret of all concerned the plan had to be surrendered.

During the five brief years of the existence of the Harvard Medical School of China, I had the privilege of working with President Eliot at the monthly meetings of the Executive Committee of the Trustees. As I look back upon the experience, the outstanding memories are those of his insistence on the maintenance of high standards of medical education from the start, in spite of all the difficulties which arose when the application of such standards was enforced; his devotion to the welfare of the China School and to the group of earnest young graduates of our School who were engaged in that remote missionary enterprise, and his remarkable grasp and memory of details—even though the period of his service included his eightieth birthday. He secured two sums of money of considerable amount which later, after the School ceased to exist, were turned over to the Corporation of Harvard University to be used for scholarships in the Peking Union Medical School. Before going to that School as its Dean Dr. Henry S. Houghton was the Dean of the Harvard Medical School of China in Shanghai. In his report of 1916 he summed up the contributions which the Harvard venture had made. It had justified its existence; he maintained in establishing the practice of permitting postmortem examinations to be made in China, in training for the first time in history well-educated young Chinese women to become nurses, and in carrying on instruction in the medical sciences, without compromise in conformity with the standards of high-grade medical schools in America and elsewhere. It was in this last respect that the Executive Committee found President Eliot as firm in adhering to his ideals as he had been forty years before, when he first became the President of the University.

V

An account of President Eliot's services to medicine would not be complete if it did not mention his valiant and determined defense of animal experimentation against the attacks of the antivivisectionists. Such attacks were not uncommon in Massachusetts in the first years of the present century, when narrowly restrictive legislation was attempted. In 1900 he appeared before a Legislative Committee, which was holding a hearing on a proposed hostile bill, and argued against the licensing of "vivisectors." He pointed out that the relatively few men engaged in medical research were at the head of their respective branches of medicine and that no one was competent therefore,

to examine them and award them a certificate of qualification. His own experience had given him the right to say that the progress "recently made in medical research is one of the most extraordinary achievements of the 19th century." "Such research is absolutely the most humane of human occupations," he affirmed, "because it has prevented suffering and death on a great scale, and because it promises to achieve in the future still greater triumphs."

What President Eliot in a letter to me called "the perverse intellectual habits of the antivivisectionists" led them to indict him as a cruel man. In a public speech in New York a prominent woman member of the New England Antivivisection Society asserted that he "had allowed his faithful horse his life-long friend and servant, to be given over to torture—his body filled with poison, and his last years ended in suffering and death." I sent the quotation to the President, remarking that the last years of the horse could not have ended otherwise than in death, but asking if the rest of the charge was true. The answer was characteristically factual. He had given a mare, judged by the veterinarian to be hopelessly lame to the Bussey Institution for use in making antitoxin. "The mare," he continued, "promoted a good service for a year and a half, recovered from her lameness and brought a fair price when Dr. Smith sold her—the price being credited to the Bussey Institution. Those are the facts. I do not know how the mare's last years were passed. I had owned her possibly three years, so there is a good deal of romance in Mrs. —'s statement. The whole transaction struck me as very satisfactory, both to me and to the mare."

In 1909 when President Eliot was invited to give the Ether Day address at the Massachusetts General Hospital, he brought substantial moral support to the practice of using lower animals for experimental purposes. In doing so he cited in detail evidence to settle three doubts of its value that he had heard expressed. The first doubt concerning the utility of animal experimentation for medical practice he resolved by enumerating the gains made in the treatment of diphtheria, meningitis, puerperal fever, the plague, tuberculosis, and other diseases of man and animals. Not only did he stress actual achievements but he laid strong emphasis on the legitimate hope which these triumphs warranted, hope that the methods effective in the past would, if continued, assure future advances in medical knowledge and power. The second doubt, as to whether biological research through experiments on animals is justifiable when the results obtained may not have immediate practical value, he countered by citing many instances in the progress of physics and chemistry, in the study of zoölogy and other sciences, which, though seemingly useless and impractical at the time, became later of very great importance for human welfare—among them the

x-rays, the ophthalmoscope, the chemical discoveries of ether and chloroform, and the breeding habits of mosquitoes

It was in meeting the third doubt, related to the question as to whether truth seeking in biology is commendable, even with the help of anesthesia and asepsis, when the research must be conducted at the expense of the comfort, joy or life of animals, that President Eliot was most insistent. He pointed out that the use of animals for the service of man was recognized throughout the civilized world and that such use in the advancement of medical and biological knowledge was thoroughly consistent with human experience and customs

"If the educated public," he wrote, "could see clearly the immense benefits to mankind which have already come and may reasonably be expected to come in much larger amount from the experiments on animals which are necessary to the progress of medical research, if the public could only realize the saving of human suffering and woe which has already resulted and is sure to result in still greater proportion from the sacrifice of a very limited amount of animal comfort and joy, the world would hear nothing more of objections to medical research

What mother could fix a limit to the number of times a comfortable horse should be bled moderately, or to the number of guinea pigs that should be sacrificed, in order to save her baby attacked by diphtheria? The tenderhearted men and women who object to animal experimentation have no vision of the relief of human beings from agony and woe which has come out of animal experimentation. If they had any such vision, they would themselves manifest extraordinary cruelty and inhumanity in opposing medical research in their present blindness they attribute delight in inflicting suffering to the patient, far seeing, and far hoping seekers for biological truth"

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FREQUENCY OF CANCER IN THE INSANE*

BY SHIELDS WARREN, M D † AND MYRTLE M CANAVAN, M D †

BUT a few data are available relating to the occurrence of cancer in insane patients. A few statements have found their way into the literature that cancer is less frequent among the insane than among the general population, and this has been previously ascribed to the simple diet, the routine existence of the inmates of insane hospitals, or other less obvious factors.

Thus in the report for 1909 of the Commissioners in Lunacy for England and Wales we read "There remains one morbid condition (cancer) which is responsible for an increasing number of deaths in the general community, from which it would almost appear as if the insane enjoyed some immunity."

Scattered studies have been made without any definite conclusions. One of the most extensive reports is that of Hahnemann¹, based on the deaths among cases of endogenous psychoses from St Hans Hospital and the State Hospital for Mental Disease in Denmark. The per cent of cancer deaths among 3,052 deaths in these hospitals from 1915 to 1927 was 5.51, whereas the percentage of cancer deaths in the total deaths in the community was 15.11. At all ages recorded and in both sexes the cancer deaths among the insane were strikingly low. However, his data show that among the insane population the deaths increase rapidly in the earlier years, the peak occurring in the decades 45-55, whereas in the general population the peak occurs in the decades 75-85. While this does not necessarily vitiate Hahnemann's figures, as he compares the insane with the general population by age groups, it does suggest unusual prevalence of some disease. His table XIII shows that at least one frequent disease is tuberculosis. Laursen² criticizes Hahnemann for the inclusion of exogenous psychoses in this material, and stresses the possible importance of constitutional type in cancer.

Chevens³, among 768 deaths in patients with endogenous psychoses, found 5.1 per cent of cancer deaths, closely paralleling Hahnemann's figure of 5.5 per cent. Moreover, his lowest percentage occurred among schizophrenics, as did Hahnemann's. This group shows a young average age at death.

In England and Wales from 1920-28 the death rate from all causes in those over 15 years of age was six times as high in the institutional-

ized insane as in the general population, while the cancer death rate was only twice as high⁴. The abnormally high rates for general paralysis and tuberculosis may explain the low relative cancer rate.

A higher percentage of cancer deaths (9.7) was found by Lind⁵ among 215 autopsies on patients of two Australian insane hospitals.

Pool⁶ reported 4.9 per cent cancer deaths from the Ramhill Hospital, England, from 1904 to 1928, among 3357 autopsies. Among the cancer deaths were included cases of primary intracranial tumors. Over half the cases were of gastro intestinal cancer. He quotes Hanf as finding 13 per cent cancer deaths among all autopsies from 1903-25 to the Charité Hospital, Berlin.

Lombard in the special report⁷ of the Massachusetts Department of Public Health in 1925 found 36 cancer cases per annum in the insane, instead of the expected 174, on the basis of an incomplete study.

In Zurich, 2000 autopsies on insane patients included 6.5 per cent malignant disease cases, of which 18 were gliomas⁸.

Practically all the reports show an apparent infrequency of cancer among the insane population. In general the insane show about 5 per cent proportionate cancer mortality, about one-third that of the general population. However, in most reports there are inadequate data for comparison and the great prevalence of other diseases (infections, etc.) in the insane offers one reason for a low cancer rate.

One of the few to attempt to avoid the pitfalls inherent in proportionate mortality rates is Opsahl⁹, who found in 17 Norwegian hospitals for the insane 244 deaths from cancer among 7000 fatalities (3.5%). The diagnosis was verified by autopsy in 170 of the deaths. On the basis of adjusted figures, however, he finds no real difference between the cancer mortality rate of the total population and the insane population. Table I, taken from his article, illustrates this point.

TABLE I (From Opsahl)
DEATHS FROM CANCER PER 10,000 LIVING INDIVIDUALS
PER YEAR

	40-50 Years	50-60 Years	60-70 Years
In the mean population	ca. 10.0	24.0	52.0
In insane hospitals	12.4	33.0	63.9
In schizophrenia	11.5	31.7	67.4
In other insane patients	15.0	36.8	57.7

However, Opsahl's figures are readily brought into line with the others when we note that he is comparing the annual death rates for can-

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x-rays, the ophthalmoscope, the chemical discoveries of ether and chloroform, and the breeding habits of mosquitoes

It was in meeting the third doubt, related to the question as to whether truth seeking in biology is commendable, even with the help of anesthesia and asepsis, when the research must be conducted at the expense of the comfort, joy or life of animals, that President Eliot was most insistent. He pointed out that the use of animals for the service of man was recognized throughout the civilized world and that such use in the advancement of medical and biological knowledge was thoroughly consistent with human experience and customs

"If the educated public," he wrote, "could see clearly the immense benefits to mankind which have already come and may reasonably be expected to come in much larger amount from the experiments on animals which are necessary to the progress of medical research, if the public could only realize the saving of human suffering and woe which has already resulted and is sure to result in still greater proportion from the sacrifice of a very limited amount of animal comfort and joy, the world would hear nothing more of objections to medical research

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about 40 per cent as much as in the state as a whole in both males and females. If we were to exclude in calculation of our proportionate mortality rates the deaths among infants and children, the discrepancy would be even greater.

In an effort to avoid the errors that may be inherent in the proportionate mortality rate and to provide a control series of a fairly comparable type, we have compiled a random group of autopsies from the large general hospitals of Boston. The method used was to match so far as possible each case in the insane series with one in the control series. The great bulk of the control cases were taken from the autopsy files of the Boston City Hospital. Some supplementary cases were taken from the files of the Massachusetts General Hospital, the Peter Bent Brigham Hospital and the Department of Pathology of the Harvard Medical School.*

In practically all instances not only were the autopsies matched by age group and sex but by year of autopsy as well although in a few instances in order to complete the older age groups it was necessary to take some cases that were autopsied in earlier years. This control group probably represents a fairly comparable social level to the cases autopsied in the state insane hospitals and is reasonably representative of the various types of disease. Possibly the number of autopsies on cases of tuberculosis is low in this control series inasmuch as special institutions exist for the care of this disease.

The exact method of building up the control series of table IV was as follows. After determining the age group and sex of the autopsies for the insane hospital group, say for the year 1925 the 1925 autopsy files of the Boston City Hospital were gone through noting the cause of death and presence or absence of malignancy in each case of suitable age and sex as it was encountered in running through the volumes of the files. In this way any possibility of unconscious selection of cases was ruled out. The autopsies in both the insane hospital group and in the general hospitals were presumably done with the same degree of care and skill so that the cases of malignant disease as recorded may be regarded as a fair reflection of the number actually present. The results are presented in table IV.

The fairly close parallelism of the results of our two types of control that from the number of cases of cancer calculated from the proportionate mortality rate of 1924 and that from the number of cases of cancer obtained from the autopsies in the various general hospitals, suggest a substantial accuracy of these two controls in representing the incidence of malignant disease in the general population. Of course it

must be admitted that the group is not large enough to be regarded as accurate, but none the less it apparently provides a satisfactory sample. If we select the 1931 Massachusetts proportionate mortality rate for cancer in place of that for 1924 the total figure for the two types of control series check almost exactly. In the minds of some the increased cancer mortality represents the effect of more accurate diagnosis, and if this be so, the 1931 rates are more correct than those for 1924 and the discrepancy be-

TABLE IV
FREQUENCY OF MALIGNANT DISEASE AMONG AUTOPSIED CASES IN INSANE AND GENERAL HOSPITAL PATIENTS

Age Group	Sex	Insane Series			Control Series		
		Total Num	Non Can-ber	Can cer	Total Num	Non Can-ber	Can cer
0-39	♂	302	298	3	302	294	8
	♀	216	209	6	216	210	6
40-49	♂	278	269	5	278	251	27
	♀	195	181	13	195	174	21
50-59	♂	285	270	13	285	235	50
	♀	188	171	16	188	160	28
60-69	♂	306	293	13	306	252	54
	♀	229	217	12	229	186	43
70-79	♂	180	168	10	180	156	24
	♀	215	205	9	215	162	53
80+	♂	82	77	5	82	72	10
	♀	133	124	9	133	114	19
Not stated	♂	8	8	—	8	7	1
	♀	6	6	—	6	6	—
Total	♂	1441	1383	49	1441	1267	174
	♀	1182	1113	65	1182	1012	170

tween the amount of cancer in the insane and in the general population even more striking.

As a further check on our series of autopsies, we have obtained through the courtesy of Dr. William Freeman the number of cancer cases encountered among 2340 autopsies at the Worcester State (insane) Hospital. The cancer cases total 126, or 5.4 per cent, omitting primary intracranial tumors.

Intracranial tumors are excluded from this group as they naturally weight the material very heavily. Thus there are encountered in this present autopsy series 27 cases of primary intracranial tumors in males and 11 in females. These include meningiomas, pituitary adenomas, acoustic neuromas and gliomas. We have excluded these tumors because the majority of them are not malignant in the pathologic sense, the only ones justifiably considered as malignant tumors being certain of the gliomas. The existence of an intracranial tumor might well predispose toward admission to an insane hospital. The incidence of all types of intracranial tumors in our autopsy series from the insane hospitals is 1.4 per cent. Morse¹¹ gives the percentage of brain tumors seen in insane hospitals

*Note. We are indebted to Dr. Frederic Parker, Jr., for the privilege of utilizing the autopsy material of the Boston City Hospital to Dr. Tracy B. Mallory for that of the Massachusetts General Hospital and to Dr. S. B. Wolbach for that from the Peter Bent Brigham Hospital and the Harvard Medical School.

cer per 10,000 living institutionalized insane and normal persons. If we take the death rate of Norway¹⁰ as a whole for 1930 we find it to be 105 per 10,000 living, whereas the death rate for insane hospitals for the year 1930 is 487 per year, or nearly five times as much. Thus his figures are not fairly comparable. Moreover, the proportionate mortality from cancer in Norway for 1930 is 11.5 per cent. The proportionate mortality given by Opsahl for the insane is 3.5 per cent. Therefore, it is apparent that instead of being at variance with the findings of other observers his findings actually parallel them. In fact, if we consider 1930 to be a fair year (and study of available reports justify this), the death rate in the insane in Norway is so much higher than in the general population that the cancer rates given in table I for the insane should be divided by four or five in order to give a true comparative picture. The high incidence of cancer of the stomach (102 out of 223 carcinomas) in Opsahl's series is very striking.

Our attention was first called to cancer among the insane by the increasing frequency with which surgical specimens from patients in the state insane hospitals were received for diagnosis at the laboratory and proved to be malignant. This increase is probably due to the generally awakened consciousness of cancer, or at least a more definite interest in this disease.

Since 1914 one of us (M. M. C.) has performed practically all of the autopsies in cases of sudden or unexpected death at the various state insane hospitals. The advantage that material of this type possesses for the demonstration of malignant disease in its early as well as its advanced stages, and for giving a fair sample of the hospital population, is obvious. We have therefore, studied the proportion of cancer found among the 2,627 autopsies of this type performed from 1914 through 1930. The cancer cases number 114, or 4.3 per cent. Owing to the smallness of the sample, no segregation according to type of mental disorder has been attempted, although practically all types are represented. The majority of the cases had been inmates for a considerable period of time, and may be regarded as fairly subject to institutional environment.

In table II are presented the causes of death in a portion of this group.

Pulmonary disorders account for 29 per cent of deaths, nearly twice as much as in the general population. Colitis is also abnormally frequent, because of occasional epidemics of dysentery.

Table III presents the actual and calculated cases of malignancy in this series. We have used the Massachusetts proportionate cancer mortality rate for 1924 (the year on which our autopsy material centers) in this calculation. The difficulty of obtaining a satisfactory norm

TABLE II
CAUSES OF DEATH AMONG 803 AUTOPSIES
OF INSANE PATIENTS

Disease	Number of Deaths	% of Total Deaths
Bronchopneumonia	91	11.3
Pulmonary tuberculosis	76	9.5
Lobar pneumonia	67	8.3
General paralysis	52	6.5
Sepsis	51	6.4
Myocarditis	49	6.1
Colitis*	47	5.9
Arteriosclerosis	28	3.5
Cancer	26	3.2
Chronic nephritis	21	2.6
Cerebral hemorrhage	21	2.6
Coronary disease	21	2.6
Non pulmonary tuberculosis	18	2.2
Brain tumor	14	1.7
Acute vegetative endocarditis	14	1.7
Chronic endocarditis	12	1.5
Others	195	24.3
Total	803	99.9

*Includes dysentery

TABLE III
ACTUAL AND CALCULATED CASES OF CANCER
IN AUTOPSIES OF INSANE PATIENTS

Male				
Age Group	Total Number	Proportionate Cancer Mortality Rate	Expected Cases of Malignancy	Actual Cases of Malignancy
0-39	302	0.1218	3.68	3
40-49	278	0.8316	23.12	5
50-59	285	1.3253	37.77	13
60-69	306	1.4966	45.80	13
70-79	180	1.2412	22.34	10
80+	82	0.6843	5.61	5
Not stated	8			
Total	1441	0.8220	118.45	49
Female				
Age Group	Total Number	Proportionate Cancer Mortality Rate	Expected Cases of Malignancy	Actual Cases of Malignancy
0-39	216	0.2649	5.72	6
40-49	195	2.1681	42.28	13
50-59	188	2.4459	45.98	16
60-69	229	1.8731	42.89	12
70-79	215	1.4520	31.22	9
80+	133	0.7363	9.79	9
Not stated	6			
Total	1182	1.2407	146.65	65

for the expected cancer incidence in the insane population is great. We are aware of the danger in attempting to draw conclusions based on the use of proportionate mortality rates. Unfortunately practically all the published reports have used these alone.

Table III brings out an apparent infrequency of cancer among the insane population—

THE COMMON NATURE OF PEPTIC ULCER AND COLITIS*

BY WILLIAM A. EVANS, JR., M.D.†

IT is often said that no final or entirely satisfactory classification of diseases can be made that is not based upon a well-defined and well-established etiology. Failing that, however, varying degrees of success are achieved in the classification and conception of disease entities. There is a satisfactory concept of a disease process when the concept is not merely a static one but one which contains the earliest manifestations of the disease as well as its fully developed and final forms. Not only that but the concept allows one to recognize a disease process as identical, though it may occur in different organs with vastly different manifestations. The concept of tuberculosis, for example, is nicely satisfying because it contains the earliest recognizable manifestations such as afternoon fatigability or a small area of infiltration in the upper lung fields as well as the final stages with massive cavitation and hemorrhage. Furthermore it is possible to recognize as identical processes a tuberculous infection of the lung and an infection of bone. The unity of this concept has, of course, been largely due to the discovery of the tubercle bacillus as the etiologic factor. However, the concept of malignant disease is equally satisfying, though the etiology is unknown, because of these same two elements, namely, the recognition of the disease in its earliest as well as in its latest stages as a progressing, dynamic process and the recognition of the disease in various organs of the body as identical. The attempts at the classification of renal disease have emphasized this necessity of considering the element of time and progression. The proper concept of a disease entity must be something more than an array of static symptoms.

It is a fact perhaps not sufficiently realized that the fashion of diagnostic nomenclature is often dependent upon the fashion of diagnostic methods. This has been particularly true for diseases of the gastrointestinal tract. In Germany, for example, where the gastroscope is in general use and a routine study is made of the gastric mucosa by means of the fluoroscope and a small amount of barium paste, the diagnosis of gastritis is made with the greatest frequency. In this country that diagnosis is hardly respectable and ulcer is considered the organic lesion of chronic dyspepsia. However, it is interesting to note that some years ago, when pathological studies were being made at the Mayo Clinic on material obtained from operations on the stomach and duodenum, the diagnosis of duodenitis came into being. If some organic lesion is not recognized the diagnosis becomes hyperchlorhyd-

ria, or if not that, gastric neurosis. This sort of nomenclature is very unsatisfying inasmuch as the name of a pathologic lesion or dysfunction is used to indicate a disease process. The proper concept of a disease process cannot be contained in the name of a pathologic lesion because the concept of development and progression is precluded. Gastric ulcer with small letters may mean anything from acute lesions following operation in the diencephalon as described by Cushing to the ulceration of an early gastric carcinoma. Written with capitals as the name of a disease it limits the conception of the disease to a single static pathologic lesion. The disease Gastric Ulcer cannot be said to exist until a gastric ulcer is demonstrable, though in all probability the disease does begin before there is any ulceration. There is said to be a typical history for peptic ulcer and that is true, but it has been the experience of everyone that a perfectly typical history may be obtained and yet no ulcer may be demonstrable either by x-ray or at operation. For example, Deaver and Burden¹⁰ have written "Every surgeon many times has had the experience of operating on a patient who exhibited the characteristic symptoms of ulcer but no ulcer by most thorough search could be demonstrated." It has even been fairly well demonstrated that the symptoms of the disease in question are due not to the ulcer but to dysfunction of the pylorus.¹¹ However careful we may be, the name of the disease will continue to force our attention on the pathologic lesion as identical with the disease and the source of all symptoms, whereas, in all probability, ulceration is but one of many equally important manifestations of the disease process.

This disease (or group of diseases) can be well defined by the following characteristics

- (1) Chronicity
- (2) Periodicity
- (3) Hypersecretion
- (4) Dysfunction of smooth muscle action
- (5) Non-specific inflammation with ulceration
- (6) A large psychic element related to a constitutional bias

This disease, I hope to show, may affect various portions of the gastrointestinal tract and perhaps the respiratory tract as well. Naturally the disease is not always present with the characteristics fully developed. It is necessary to include in the disease concept the earliest, or what von Bergmann⁹ would call the larval forms, although it seems unnecessary to anticipate a metamorphosis in the ultimate development of the disease process.

The manifestations of this disease in the upper gastrointestinal tract are recognizable in chronic gastric and duodenal ulcer, chronic gas-

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as 18 In a group of 1,066 autopsies from the laboratory of the New England Deaconess Hospital, where a fair amount of neurosurgery is done, we estimate only 0.8 per cent intracranial tumors Bailey¹² quotes Wood as giving the incidence of brain tumors as 1.8 per cent of all tumors, which would be far lower if compared with deaths from all causes, of which our series consists

We therefore feel justified in excluding the intracranial tumors as they would constitute 25 per cent of our cancer deaths However, even if we do include them, the incidence of cancer is abnormally low in our insane series, 152 cancers and intracranial tumors as against 265 expected cancers on the basis of the proportionate mortality rates, or 57 per cent of the expected

That our series is fairly representative of cancer in the insane is shown by table V, which

TABLE V
PRIMARY SITES OF CANCER IN THE INSANE

	Medico-Legal Series (M M C)	Worcester Series (W F)
Bladder	3	4
Bone	4	2
Breast	12	9
Intestine	20	20
Kidney	1	5
Lung	2	10
Pancreas	8	4
Pharynx	5	2
Prostate	1	2
Skin	5	9
Stomach	16	23
Uterus	12	16
Others	25	20
Total	114	126

compares the primary sites of cancer in our series and in the Worcester State Hospital series

On the basis of the figures in the literature there is about one-third as much cancer in the insane as in the normal population Our own results are roughly parallel Whether these results are correct only careful study of the insane population will tell Such study is urgently needed

Because of the great variation in total mortality between the insane and the normal population, any satisfactory standardization of the cancer rate is extraordinarily difficult One able statistician, Greenwood¹², who has attempted this, finds that in England and Wales for 1910-12, the rate in the general population was 13.4 per 10,000 and in the institutionalized insane 15.8 per 10,000

If we assume the accuracy of available information, cancer is abnormally infrequent in the insane This might be explained by environment, by heredity, or most likely by the relatively short life expectancy of the insane patient Thus shortened life expectancy may be an intrinsic feature of the disease, or a result of the environment Be this as it may, the insane patient has a definitely shorter period for the development of cancer than has a member of the general population

Still another problem is presented in the determination of what rate to use in the calculation of the expected cancer mortality under these circumstances It is possible that a mortality rate does not best represent the facts but a morbidity rate should be used, or even a rate between the two In a subsequent paper we hope to produce definite evidence on these points

There is no reason to assume that environmental factors are of importance, other than perhaps increasing the amount of respiratory disease Diet may be more monotonous and the conditions of existence less varied, but not sufficiently different from those of the bulk of the population to alter the incidence of cancer

Evidence is accumulating that a constitutional predisposition to cancer, perhaps hereditary, exists Heredity may also be of importance in insanity We must at least consider the hypothesis that the soil best suited for the development of cancer differs from that in which insanity develops

On the basis of information at present available, cancer is definitely less frequent in the insane than in the general population However, we realize the data are as yet inadequate

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function other than that of the stomach and pylorus have been described. It is the conception of von Bergmann that the spasm of some small vessel in the stomach is the primary incident in the pathogenesis of peptic ulcer. Evidence of such a vasoneurotic diathesis in patients suffering from ulcer has been found by O. Müller in his microscopic observation of capillary blood vessels. This has been confirmed by Duschl²⁰ who made direct observations on capillaries in the living stomach mucosa. Varying figures are given for the incidence of hyperacidity with ulcer but the most carefully controlled and accurate work appears to be that of Cheney and Bloomfield¹⁴ who showed that in all cases of their series not only was the gastric acidity above the average but the volume of secretion was also above the average for the corresponding age period. However the occasional case of peptic ulcer with normal acidity or even an acidity indicates that excessive secretion is not essential to ulcer genesis. Careful studies of mucous secretion have not been carried out, perhaps largely because of the technical difficulties involved. However Simchowicz¹⁹ states that there is no clear relation between the amount of mucus and the amount of acid. He further states that an increased amount of mucus is the usual finding in gastritis. The significance of gastromyorrhea—whether a secretory neurosis according to Kuttner or a symptom of gastritis according to V. Aldor—suggests the same problem which arises when an excessive amount of mucus is found in the colon^{6 11 13 23 25}

GASTRITIS

Gastritis is a disorder of the greatest importance in an understanding of the chronic diseases of the stomach. Unfortunately it is a diagnosis which though very popular thirty or forty years ago has fallen into general disrepute. This was undoubtedly due to the fact that there was no means of adequately confirming the diagnosis during life and at autopsy the stomach was so disfigured by postmortem digestion that slight inflammatory changes could not be detected. Chiefly in Germany and Sweden the diagnosis has been revived and placed upon a sound basis through frequent use of the gastroscope and a roentgenologic technique designed to reveal details of the gastric mucosa. In this country the term usually refers to those gastric lesions which are secondary to chronic alcoholism, improper mastication, nicotine abuse, chronic passive congestion, nephritis or chemical poisons, but in addition there appears to be a chronic gastritis which for want of a better designation, might be termed primary or idiopathic and which bears a close relation to peptic ulcer.* There is so great a similarity in the

manifestation of the two diseases as to suggest their identity. Konjetzny^{41 43} points out that gastritis has the same periodicity in its manifestations as ulcer. Korbisch⁴⁴ says that gastric hypertony, hypermotility and hyperesthesia are common to both diseases. According to Hohlweg²³ disturbance of motility, particularly at the antrum is common in chronic gastritis. Lemberger⁴⁵ believes the spasmodic and hypersecretory phenomena are parallel in gastritis and peptic ulcer. A number of studies have come from the Mayo Clinic concerning duodenitis which, without much doubt is the duodenal equivalent of the type of gastritis under discussion. Judd³⁵ mentions those cases with a long history typical for ulcer which reveal only duodenitis at operation. This fact has been later repeated and amplified by Hartman and Rivers⁶, Wellbrock⁵, Rivers³ and Hufford²⁷

A point of particular interest is the occurrence of gastric and duodenal inflammatory changes coincident with peptic ulcer. While the reports from many German clinics^{20 27 39 40 46} give the incidence of inflammatory changes a high figure and a number of workers report that some signs of inflammation are invariably present, Walters⁴, on the basis of material at the Mayo Clinic, states that peptic ulcer is a different disease here than in Germany. As an unconfirmed and unlikely statement no great importance can be attached to it but it does suggest the confusion which attends the recognition of inflammatory lesions. It is not alone in Germany but also in France and Sweden²⁷ that emphasis is placed on the association of inflammation with ulcer. On the whole it seems much more probable that there is no significant difference in the disease in different countries but that the inflammatory lesions are found in those countries where they are systematically and diligently looked for. Partly on the basis of Walters' statement, Barclay¹ in his recent book on the roentgenology of the digestive tract minimizes the importance and possibility of recognizing gastritis quite contrary to the views of a great number of roentgenologists headed by a person no less reputable than Forssell. Recently in this country Crane¹⁵ expressed more awareness of the roentgenologist's shortcomings in gastric diagnosis, when he wrote "It is fair to say that in the past roentgenologists have missed many more gastric ulcers than they have found —" Furthermore he is more hopeful for the newer technique when he writes "Certainly we can look forward with eager interest to the development of roentgenologic methods of delineating the rugae of the stomach which, if successful, will, we believe, enable us to recognize gastric ulcer as never before and make good a reputation that has somewhat outrun our capabilities in the past." It is of importance to note that inflammatory changes when they do

*To confuse this form of gastritis with any of the above-mentioned would be as serious an error as to confuse the hydrothorax of tuberculous pleurisy with that of heart failure. This appears obvious but Hauser²⁷ in considering the formation of ulcer wonders that ulcers do not occur in the areas of gastritis surrounding carcinoma of the stomach.

tritis, chronic duodenitis, hyperacidity and probably many forms of gastric neurosis. It is probable, too, that cardiospasm and ulcerations of the lower end of the esophagus belong in this group.

PEPTIC ULCER

Chronic peptic ulcer presents the disease in its fully developed form. The elements of chronicity and periodicity are too well known to mention. What is significant is that these same elements, in fact a history typical for peptic ulcer, may be obtained and yet no ulcer be demonstrable either at operation or by x-ray. In the first edition of Osler's textbook⁵⁸ published in 1892, before the use of x-ray in gastrointestinal diagnosis he states, in discussing the diagnosis of ulcer: "The greatest difficulty is offered by certain cases of gastralgia which may resemble ulcer very closely, as, with the exception of hemorrhage, there is no single symptom which may not be present." It is now known that even hemorrhage is not a distinguishing feature.

In a large clinic one sees not infrequently cases of hemorrhage at some point in the upper gastrointestinal tract when no lesion can be demonstrated by the roentgenologist. Rivers⁶⁴ has discussed these "hemorrhagic focal gastroduodenal lesions" in cases operated upon because of hemorrhage and in which no ulcer was found. He regarded these lesions as infectious gastritis and duodenitis and possible forerunners of chronic ulcer. Korbseh⁶⁵ states that small hematemeses are more commonly seen in gastritis than ulcer, while Konjetzny⁶² describes eight cases with a history typical of ulcer, including hemorrhage, which showed at operation gastritis but no ulceration. Bédère, Moutier and Porcher⁶ have described a case with all the manifestations of ulcer including hemorrhage on numerous occasions in which no ulceration or even inflammation could be discovered at operation.

In the French and German literature one reads, not infrequently, of the "ulcer disease" to describe these cases with all the signs of ulcer but the ulcer itself. Hohlweg²⁸, Steiner⁷⁰ and Renaud⁶¹ have emphasized this distinction and have intimated that gastritis is a significant lesion in this disease. Indeed, Renaud⁶¹ regards gastritis as the essential lesion and ulceration simply a complication. Gray²⁹ reported 250 cases showing the duodenal ulcer symptom-complex, in 32 per cent of which no ulcer could be demonstrated. However, he ascribes tobacco smoking as the etiologic factor in 41 per cent of these and a "constitutional disorder" in 18 per cent.

It seems at this time that without doubt peptic ulcer is not simply a local disturbance of the mucous membrane. The great frequency with which recurrence takes place after surgical removal or medical treatment is sufficient testi-

mony. Emery and Monroe²², in reviewing a large series of cases, state that the evidence indicates that peptic ulcer is a chronic disease in which our present methods of treatment are only palliative. From this point it is not a long step to the conception of peptic ulcer as a constitutional disease. Indeed, constitution is one of the most commonly mentioned aspects of the disease in recent discussions^{24 63 66 67}. The work of Diaper is well known. Hurst³¹ regards a gastric diathesis as the essential predisposing cause of duodenal ulcer. The motor and sensory signs of the diathesis are as obvious in the very early cases as in the late ones and they persist after the ulcer has healed. Furthermore the diathesis is frequently familial, some members showing evidence of the diathesis without ulceration. McVicar⁵⁰ has reported a large ulcer family and Kalk³⁰ gives references to numerous articles in which ulcer families are described. He is of the opinion that the younger the patient the more prominent is the constitutional or hereditary factor, whereas in the older patient the environment plays a more important rôle. In a small series (17) of young (13 to 19 years) patients with ulcers, he found 53 per cent with a definite history of stomach complaints in the family but had reason to believe the percentage would be 75 or 80 per cent if a more accurate history could be obtained.

The importance of environmental factors is well known. Worry and emotional disturbances are commonly recognized as a cause of recurrences. Peptic ulcer may heal under any circumstances conducive to a sense of psychic well-being. It has been frequently demonstrated that rest in bed may be quite as helpful as a strict regimen of diet and alkaline powders. Russ⁶⁰ has described the value of travel and change of residence while Ryle⁶⁷ has recently given a very striking description of a patient with peptic ulcer who, while at home, had suffered pain even under the most rigid regimen, but while mountain climbing in the Tyrol could eat and drink everything without discomfort.

Spasm and excessive acid have long been regarded as among the most important signs of peptic ulcer and likewise of importance in many theories of the pathogenesis of ulcer. Deaver and Burden¹⁰ (also⁵²) for example, believe that a combination of pylorospasm (preventing regurgitation of alkaline duodenal contents) and hyperacidity will produce peptic ulcer. Spasm of the stomach, spasm at the pylorus, excessive peristalsis and excessive secretion are mentioned by Barclay¹ as the indirect ulcer signs which may be recognized with the Roentgen ray. Moutier⁶⁴ has described very graphically the appearance of the stomach examined by means of the gastroscope and has pointed out the hypertonia of the stomach wall, spasm often noted at the cardia or pylorus and the "mucus lake" which is so often seen with ulcer. Manifestations of disturbed smooth muscle

admitted by many observers (Brown¹³ Rosenheim⁶⁵, Friedenwald²⁴ and Zweig⁷⁰) Unfortunately in discussing constitution, there are no objective measurable or demonstrable characteristics to indicate the defect in question. What one usually does is to refer as Draper does, to some measurable characteristic such, for example, as the gonial angle which is assumed to be a constitutional characteristic. Then if there is a correspondence between this characteristic and the disease in question the disease will also be assumed to be constitutional in nature. However there is no reason to suppose that there is any degree of parallelism in the incidence of a larger number of constitutional characteristics. Although the question of constitution remains one of impression unsupported by well-defined evidence, it is perhaps significant that there is a widespread impression of constitutional disorder as a basis for the diseases in question.

The most frequently described aspect of these colon diseases is the manifestation of nervous disorder. It is sometimes pointed out that anyone suffering from attacks of exhausting diarrhea might be entitled to some nervousness, but the nature of the disorder is something quite different from what one sees in tuberculous colitis for example. It appears to be much more a characteristic of the patient's personality than a by-product of some disease process. "Nervousness" is, of course, accepted as one of the most striking manifestations of mucous colitis^{11, 6, 12, 13}. Eggleston²¹, Hunter³⁰, Drucek¹⁵, Jordan³⁴, Barker⁶ and Sherman⁶⁶ have all commented on the neurotic character of patients suffering from spastic colon while Eggleston²¹ and Hunter³⁰ point out that the symptoms are most frequently incidental to some emotional disturbance. Likewise Bastedo⁷ comments on the exacerbation of mucous colitis by strain and fatigue. This feature is no less striking for ulcerative colitis. Rosenheim comments on the signs of an inferior vegetative system in these patients and Zweig mentions their labile nervous system. Even Larson⁴⁶ and also Bergen^{3, 4}, while holding to the infectious nature of ulcerative colitis point to the importance of psychic factors in bringing about relapses. Murray⁵ and later Sullivan and Chandler² have given detailed personality studies of a number of patients showing how closely related attacks are to emotional difficulties. Murray⁵⁵ believes there is a common psychologic make-up in cases of gastric ulcer and colitis characterized by fearfulness, and points to the emotional immaturity of patients suffering from colitis.

SUMMARY

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It is a pleasure to express my gratitude to Prof. E. Grafe and Priv. Doz. Strieck for the opportunity of attending many gastroscopic examinations at University Medical Clinic at Würzburg and to Prof. Henry A. Christian for a number of important suggestions in the preparation of this manuscript.

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occur, occur not only in the immediate vicinity of the ulcer but at distant and isolated areas as well. As with so many of the other manifestations of ulcer the question arises as to the primary or secondary nature of the inflammatory lesion. Konjetzny and his followers^{10 47 48}, reviving the views of Cruveilhier, are ardent supporters of the view that gastritis is primary and that ulceration takes place only in an inflammatory area. On the other hand are numerous opponents^{20 27} who are of the opinion that inflammatory changes are entirely secondary and of negligible importance. This is a question which cannot be decided by viewing a disease process in its isolated states, but only when it is viewed as a progression from the earliest to the latest phases. The most significant work of this sort is a recent report by Norpoth⁶⁷ in which three patients are described in whom a diagnosis of gastritis was made upon roentgenologic or gastroscopic evidence and in whom an ulcer developed at a later date, in one case six months later, in another seventeen. It is entirely possible that by close attention to the individual make-up, to the history and to the earliest Roentgen and gastroscopic signs, it will be possible to diagnose the disease "peptic ulcer" before ulceration takes place.

* * * * *

COLITIS

The term colitis is in a state of disrepute almost as sad as that of gastritis. Again the wide variety of dissimilar conditions to which the name is applied and the lack of positive criteria for diagnosis are responsible. There are certain well-defined varieties of colitis, such as tuberculous colitis, bacillary and amebic dysentery, colitis resulting from chemical poisons, nephritis, etc., but in addition there is a group of colon disorders bearing the terms spastic colitis, mucous colitis, ulcerative colitis, catarrhal colitis, etc., which appears to have a definite relation to the diseases described above. Barger⁴ and also Jordan³³ object to the term colitis being applied to these non-infectious diseases but the nomenclature is now so well rooted that it is unlikely that any change will take place.

The four above-mentioned non-specific forms of colitis have been grouped together as representing a view frequently expressed in recent years and one which seems particularly illuminating. Brown¹³, Mallory⁴⁹, Tidy³ and Metz⁵¹ are among those who point to the common character of these disturbances while there are numerous writers who described the transitional stages between two or more of the closely related forms. Ideally these diseases would represent separate entities, one dominated by spastic phenomena of the colon, one by the discharge of mucus, and another by inflammatory and ulcer-

ative lesions, but it is rare that the disease presents itself in so ideal a manner. Usually there are manifestations of all these phenomena in varying degree. For example, Eggleston²¹ says there is excessive mucus in many cases and Drueck¹⁸ in the majority of cases of spastic colitis, while according to Hunter³⁰ mucous colitis may be regarded as an aggravated form of spastic colon. In reporting a large series of cases of mucous colitis, Friedenwald, Feldman and Rosenthal²³ point out that inflammatory changes are at hand in most cases and ulcerative colitis may develop. According to Drueck¹⁸, inflammation frequently occurs in the spastic colon and may terminate in ulcerative colitis. Kuttner⁴⁵ (also¹⁰) holds that colitis ulcerosa indicates the late stage of the disease and in this seems to be supported by the majority of recent German writers.

The relation of the non-specific colon disease to the previously discussed gastroduodenal disease is of particular interest. What appear to be the fundamental phenomena of disturbed muscular function, hypersecretion, non specific inflammation leading to ulceration, and a constitutional bias are common to both groups. It is an interesting speculation of Eggleston's²¹ as to why women are apparently more susceptible to colitis and men to peptic ulcer. Not rarely do both diseases occur in the same individual. A high incidence of bowel symptoms in gastric and duodenal ulcer has been noted by Miller, Pendergrass and Andrews⁵³. Friedenwald, Feldman and Rosenthal²³ (also³²) found 5 per cent duodenal ulcer, 3 per cent gastric ulcer and what they term gastric dyspepsia in 64 per cent of their five hundred cases of mucous colitis. Bockus, Bank and Wilkinson¹¹ found cardiospasm in two and pylorospasm in ten out of fifty cases. Baigen and Rivers⁵ found peptic ulcer sixteen times in their series of five hundred cases of ulcerative colitis and state that there was a "definite parallelism between the severity of the symptoms of the associated conditions". They also mention that there is some "presumptive evidence of allied etiology". The non specific character of the inflammation in the upper and lower portions of the intestinal tract seems to be rather generally agreed upon. Rosenow's⁵⁰ views in regard to peptic ulcer and Barger's³ for ulcerative colitis have not received any widespread support^{1 60 59 13}. The frequency of the acute and chronic infections as the apparent precipitating factor in many cases is given by Larson⁴⁰ as evidence of the infectious nature of ulcerative colitis but when it is realized that infections may precipitate symptoms in such non-infectious diseases as pernicious anemia or diabetes, the argument carries little conviction.

The impression of a constitutional defect is

admitted by many observers (Brown¹³, Rosenheim⁶⁵, Friedenwald⁶⁴ and Zweig⁶⁶). Unfortunately in discussing constitution there are no objective, measurable or demonstrable characteristics to indicate the defect in question. What one usually does is to refer as Draper does, to some measurable characteristic, such for example, as the gonial angle which is assumed to be a constitutional characteristic. Then if there is a correspondence between this characteristic and the disease in question the disease will also be assumed to be constitutional in nature. However there is no reason to suppose that there is any degree of parallelism in the incidence of a larger number of constitutional characteristics. Although the question of constitution remains one of impression unsupported by well-defined evidence, it is perhaps significant that there is a widespread impression of constitutional disorder as a basis for the diseases in question.

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ORGANIC DRIVENNESS

A BRAIN-STEM SYNDROME AND AN EXPERIENCE*

With Case Reports

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IT is a truism that the make-up of the personality is founded on the biological structure and function of the individual, and that certain aspects of the personality are related to specific structure and function of the nervous system. In support of this truism is our present-day knowledge of brain localization. This point of view has frequently been misinterpreted in that even the most accurate localization of brain functions does not suffice for satisfactory explanation of the individual as a whole. This, however, seems to be a fair statement that the over- as well as the under-development of certain brain areas serves as a sort of background of cer-

tain plus and minus members of the species or, in other words, of certain superior and deficient types. More specifically, the significance of the frontal lobes and of the brain-stem¹ seems to us most important in this connection. It is the brain-stem alone with which we are concerned in this presentation.

We are of the opinion that there exist personality types which owe their existence, at least partially, to a special organization of the brain-stem.² The clinical and pathological investigations of Economo's disease have enriched tremendously our knowledge of this brain area. Years ago Hauptmann³ indicated how change in the brain-stem produced by encephalitis epidemica was effective in influencing the entire personality. Our present observations, not restricted to encephalitis epidemica, have led us to infer the existence of a condition quite the opposite of that which Hauptmann described.

2 One such type has been analyzed by Bostroem, A. Über eine eigentümlichen Form psychischer Entwicklungshemmung mit Beziehung zur Athetose oder zur frühkindlichen Motorik. Arch f Psychiat 75 1 20 1925

3 Hauptmann, A. Der Mangel an Antrieb — von innen gesehen (Das psychische Korrelat der Akinesie) Arch f Psychiat. 55 615 839 1922

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Read before the Massachusetts Psychiatric Society October 27 1933

1 The literature on the brain stem has become monumental in recent years. We may refer especially to Bostroem, A. Strikbare Störungen Bunkes Handbuch der Geisteskrankheiten 2 207-242 1928 to Wilson S A K Modern Problems in Neurology Wm. Wood and Co. New York 120 259 1933 to Economo C Encephalitis Lethargica, Its Sequela and Treatment, Oxford University Press London 1931 and to Lotmar F (see footnote 5)

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He has shown that as a consequence of the degenerative process in the brain-stem his patients developed a "lack of inner impulsion" obviously a clear-cut deficiency of personality function. We have observed as many investigators have done before us that there sometimes develops a surplus of inner impulsion in such patients. This we call *organic drivenness*⁴. We do not maintain that this *organic drivenness* is found in encephalitic and metencephalitic patients only. Rather we conjecture that there may be organically driven individuals who although defective in brain-stem organization do not betray any other evidence of it except *organic drivenness*. Furthermore we surmise that quite a few individuals who are now labelled psychopathic personalities may really be "brain-stem" cases in the widest sense of this concept. On the other hand we feel it necessary to proceed very cautiously with such an hypothesis and to present material where indubitable neurological evidence in addition to the *organic drivenness* guarantee that such personality alterations congenital or acquired, may be related to this circumscribed area⁵.

1 C G Scotch Irish, male, aged 8. His father is an alcoholic, his maternal grandfather had died at 35 of brain tumor. The patient was a term child, an instrumental delivery (birth weight 9 pounds). There was no history of birth trauma. Teething walking and talking occurred at average ages. He had mild whooping cough at four months. At three years of age he had a severe attack of measles and some time later had another attack which was also diagnosed as measles. He entered kindergarten at four and the following year was promoted to the first grade. He then became a disciplinary problem he could not be kept in his seat, and was a disturbing influence on the other children. He read well, far in advance of his age, was good in arithmetic, but could not be induced to write. He remained in the first grade the following year but was dismissed because he frequently left the school at recess time and did not return. He ran away frequently from home as well as from school, and began to steal rides on the trolley cars and trains. He stole money from home and spent it for candy and toys which he would give away to his friends. In 1931 he developed a spasm of the eyes and neck twitches and other 'nervous characteristics'. He began to defecate in his trousers and to smear the feces about. It had always been necessary for his mother to dress him because he could not learn to put on his shoes and to do his buttons up properly.

This small well nourished boy was decidedly restless and even when told to sit still continually moved his legs and his arms making choreiform movements with his fingers. It was difficult for him to keep his eyes closed when asked to do so. He

showed a ticlike movement of his neck in which his head was jerkily thrown back, his shoulders moved rather peculiarly. His gait was definitely clumsy and the left arm swung through a wider excursion than the right. His face seemed rather immobile and there was a slight internal strabismus of the left eye. Testes were undescended. Urinalysis blood count and blood Kahn were negative.

He was always unkempt and his shirt and trousers were rarely buttoned. He talked continuously sometimes to himself or to the task in hand, and frequently whistled. He would always become very much interested in what others were doing but it was impossible for him to do any work independently. He was always ready to do new things but would quit very quickly. The right hand was preferred more often than the left. Handwriting was extremely poor for his age. He cried very easily and frequently complained that his hands and arms felt tired. Psychological examination indicated an IQ of 82 with the report that there were unpredictable oddities in executing commissions, a marked degree of visual motor incoordination and distractibility of attention.

2 A A, Italian male aged 11. He is the sixth of seven children of whom four are feeble-minded and two in the State Reformatory for 'incurability'. The father is said to be an impulsive unreasonable probably brutal individual. The patient was born three months prematurely and at birth weighed four and one-half pounds. He entered school at six and one-half and had to repeat the second grade. He is thought to have practised mutual masturbation at 6 and is known to have been masturbating during the past two years. He has 'always' been clumsy and rather 'poorly coordinated'. School difficulties began in the third grade. He became very restless and overactive did not keep still or concentrate and had periods of excitement when he annoyed and attacked other children without provocation. He required constant supervision to prevent exhibition of his genitalia before girls in the schoolroom, he masturbated quite openly and stole the belongings of others. He frequently was seen to stumble.

The patient was underdeveloped but fairly well nourished. He was generally rather hirsute. He had poor general coordination inasmuch as his gait and the movements of his hands were clumsy. His head projected forward slightly. He was left handed. General muscular tone was somewhat increased. His head was small and bullet-shaped and there was bilateral cryptorchism. Blood count urinalysis blood Kahn, and spinal fluid Wassermann were negative.

He was a steady talker and would become immediately interested in new material. Although he was at first friendly and cooperative he soon became quite excitable and antagonistic, and later became extremely offensive quarreling with those with whom he had been most friendly and accusing others of swearing at him and striking him. He was quite combative, would frequently interfere in the activities of others and would shift the blame to them. Whenever thwarted in any of his meddling activities he flew into tantrums of rage kicking biting or scratching anyone who happened to be in his way, and damaging furniture. He was a consistent liar. There would be interludes of a day or two during which he was more quiet and tractable. His IQ was 82.

3 M J, American, female. The patient is a married childless woman in the forties, a very friendly and sociable person of about average intelligence. She never sits still, she is continually changing the

4 Drivenness is perhaps a rather unusual term which has the linguistic disadvantage of non-existence in the dictionary. We have avoided the use of the word Drive since with our noun Drivenness we wish to imply the extreme surplus of energy which adjectives which might be selected to modify 'Drive' do not seem to describe adequately. The term 'organic' denotes a direct biological source.

5 Lotmar F. In 'Die Stammganglien und die extrapyramidalen Symptome' Berlin 1926 discusses the possibility of a 'Bewegungsmotivzentrum' (center of motor impulsion) in the region of the posterior thalamus, the hypothalamus and the aqueduct.

position of her arms and legs, and twitching may be seen in her face, which is usually smiling, or in her neck and shoulders. Her hands are always moving, now striking her face or neck, now playing with her necklace or wrist watch. The choreiform nature of the movements cannot well be doubted. She can not stop talking. There is always a deluge of questions which one is seldom given time or opportunity to answer. Sentences really rush out of her mouth. If the observer, exhausted by the onslaught of a few minutes' contact, thinks that now she will drink a little coffee, or will pause for something else, he suddenly sees her at the other end of the room arranging a piece of furniture, manipulating a cigarette, talking to someone else, always and apparently unceasingly active.

DISCUSSION

We are not primarily interested in making a label diagnosis in any of these cases. We are aware of the fact that the clinical pictures shown by the children are often seen as sequelae of encephalitis epidemica, they certainly occur also after other encephalitic processes. Mrs. J. may be suffering an incipient stage of Huntington's disease although there is no observable sign of mental deterioration.

In all our cases we immediately observe the following: (1) A high degree of general hyperkinesis with either choreiform or tic like (myoclonic) movements in face, trunk, and extremities⁶, (2) outstanding difficulty, approaching an almost complete inability in maintaining quiet attitudes (be it only for a few seconds), (3) abruptness and clumsiness in the performance of movements, even of relatively simple ones, (4) an explosive motor release of all voluntarily inhibited activity⁷.

We daresay that the symptoms enumerated under 1-4 are related to the brain-stem. The impression that one gets when observing these patients, that here is an "organic" condition, is overwhelming. We realize that every neurologist and psychiatrist is perfectly familiar with these pictures and with the "organic impression" which the metencephalic children especially induce.

The general and special hyperkineses⁸ undoubtedly stands in the foreground of the picture. The patient seems to be a puppet at the mercy of its source, i.e., a defective brain-stem. We assume that the hyperkinesis is the primary symptom and that symptoms 2-4 are secondary aspects of it. It seems to be true that the impulses traveling from the brain-stem are under terrific tension for release and hence put the individual to a greater or less degree out of harmonious motor control. It must be granted that fundamentally the individual is unable to stop such movements since he is unable to prevent their origination in the brain-stem. However, the brain-stem is not the whole individual. By

the use of (or at least in the attempt to use) efferent pathways the individual may resist (or at least try to resist) the impulse. It is readily observed, however, that this resistance, such as in an attempt to sit still, or to control certain movements, does not accomplish very much, for sooner or later control is broken down by the power of the impulse. This may provide some explanation for (2), the difficulty in suppressing the movements concerned for even a short while and for (3), that the stowed impulse finally breaks down resistance abruptly. The clumsiness of the consequent activity indicates the individual's inability to perform movements at his ease and with "gracefulness." The explosive motor release of (4) is probably a special case or extreme of the abruptness and clumsiness (3).

We are aware of the fact that with these last statements we have stepped out of the field of neurological observation and simple description of data and have entered the realm of psychological explanation. This procedure is justifiable since the mere evaluation of neurological symptoms does not furnish sufficient understanding for those ultimately concerned with the personality as a whole. It need scarcely be emphasized that we are never confronted with neurological symptoms alone but rather with individuals under specific biological conditions. To these conditions it is necessary to respond as total personalities, i.e., biologically and psychologically. If any one is put under certain conditions he is bound "to do something about it." The organically driven are no less bound "to do something about it." There are two possibilities with which they must find their way, either they succumb completely to their drivenness or they resist by the attempt to modify what is going on within them.

Concretely, one may recall the horrible and pitiful sight of some of the hyperkinetic patients who, in the acute state of Economo's disease, literally rolled themselves to death. They represented the picture of *organic drivenness* at its extreme. There was no way out of this torture. One could only stand by and helplessly watch a hopeless fight. Fortunately, the situation in the patients dealt with here is not quite so hopeless, although in them also may be observed some fight, the fight of the organism against a kind of foreign body, the fight of the personality against something it cannot stop, something which is beyond the grasp of the individual because of its very nature. Simple and dull persons may readily succumb, sometimes indeed having even a little fun with their "jerks", but many, especially the more intelligent and sensitive resent⁹ their affliction and

⁶ We have seen athetoid movements though rarely. In none of our cases was tremor observed.

⁷ It is very instructive to hold the hands of these individuals for some minutes in order to observe the increased strength of motor discharge in other parts of the body.

⁸ General hyperactivity special choreiform movements tic like mannerisms etc.

⁹ The aspect of resentment which A. Adler has put on the account of organ inferiority is probably only a part of the picture. That organ inferiority and overcompensation do play a certain rôle will be mentioned in a different connection.

fight These individuals try to suppress some of the movements and in this attempt to conceal¹⁰ them from their fellow-men, superpose upon them all sorts of "voluntary" movements calculated to demonstrate the nonchalance of their motor activity (cf Mrs J)

Terms such as "resenting" or "fighting" descriptive of a certain attitude of the individual, imply that there exists in him something more embracing than a mere psychological or biopsychological "reaction" Most comprehensively, this something is quite generally considered *experience* or *experiencing* and however much certain factors (biological or psychological) may actually or apparently on occasion become more significant, it is always the personality as a whole which enters into experiencing It is by the knowledge, appreciation, insight into and evaluation of a given individual's experiences, and his ways of experiencing, that one becomes able to develop true psychological understanding of him. There are two principal ways of examining a given individual's experiences (1) we may observe his expressions¹¹, i.e. the ways and means by which he conveys what is going on within him to the outer world (as by language, mimicry, gesture,—"*Ausdrucks*" psychology), (2) we may ask the person to tell us about his experiences (introspective psychology) There is no doubt that in each of these alternatives a tremendous amount of error on the part of the observer as well as of the observed creeps in, in the observation and interpretation of the tenuous and scanty data at hand In the following discussion we make use of both ways of examination, which is of course, not without the danger of such a combined methodological approach

If, in a clinical situation, we examine the knee-jerks of an individual we are dealing with a neurological sign If, in another situation, we see an individual's face become radiant we interpret this sign as an expression of joy, i.e., the expression of an experience The person whose knee-jerks we test may experience them, probably as a peculiar movement, but certainly one over which he has limited control In the radiant face of the joyous individual a twitch or a tic may be observed (perhaps simultaneously with the radiance) which we do not accept as an expression but rather as a neurological sign It may happen that our radiant individual is conscious of, or experiences the twitch and attempts to conceal it Furthermore, it may happen that with recognition of the onset of the twitch he smiles or grins in order to mask it With these rather simple illustrations we are thrown into the midst of the complex neurological-psychological or bet-

ter, the biological-experiential problem of the *organically driven* patient.

If we observe the hyperkinesis of an *organically driven* person we are not only impressed by a neurological sign but necessarily also we see an individual in whom this sign is biologically produced and who is somehow experiencing it The hyperkinesis appears to be imbedded, as it were, in some experiential make-up In this experience or experiential make-up the whole personality is involved, and upon the individual's way of experiencing will depend what is done or what will be attempted with the hyperkinesis (1) he may let the hyperkinesis have its course, standing by, so to speak, resentfully or resignedly, angrily or irritably, (2) he may energetically try to suppress it, (3) he may carefully superpose upon it voluntary movements What we are able to observe of the individual's experience of hyperkinesis however, are only his expressions, namely (1) the resentment, resignation anger, or irritability, (2) a remarkable exercise of will power and, perhaps with this (3) a more or less pronounced adroitness, respectively It is frequently difficult to see these experiential expressions in their true light Sometimes, too, it is almost impossible to recognize that behind them something fundamental to the experience is going on, which, in our special instance, is a biological (really a pathobiological) function, a neurological symptom, the hyperkinesis

This, however, does not tell the whole story The individuals concerned experience not only the hyperkinesis, but also, and perhaps more intensely, the surplus of impulsion by which the hyperkinesis is brought about In other words, they experience their *organic drivenness* In the experience of their drivenness they may feel themselves more or less helpless and be forced to submit in some way We venture to suggest that not infrequently the relative significance of the experience of the hyperkinesis recedes into the background, individuals may become accustomed to it to a considerable extent and may even become able to automatize eventually some of their attempts of suppression, concealment, and superposition of these movements The experience of the *organic drivenness* itself, however, apparently can never be entirely "forgotten" since it is set loose continuously, via the motor system, against the whole personality These individuals feel themselves, at various times and to various degrees, it is true, literally driven, they cannot stop even if they want to, they are carried away by their *organic drivenness* and have a difficult task to keep pace experientially with it.

From this standpoint we may find some interpretation of the distractibility, general hyperactivity, apparent tachythymic or even hypomanic conduct, the ofttimes startlingly widespread and multifarious interests and special ac-

10. cf. Guttman, E. Beobachtungen bei Chorea minor. *Ztschr. f. d. ges. Neurol. u. Psychiat.* 107 584 617 1927

11. Expression includes what is generally designated as behavior but is more than behavioral reaction because of its experiential source.

tivities which characterize these individuals psychiatrically

The distractability appears as an extreme fluctuation of attention or lack of continued concentration. Explanation of this may be that the individual, always on the verge of another flare-up of his drivenness, is incessantly torn away from his present task. This may often be seen as so called hypermetamorphosis (Wernicke) in a very impressive way. In this, as in all cases, the total make-up of the individual is important in the determination of whether and how far he is driven aimlessly from one useless activity to another, or whether by virtue of favorable temperament and intelligence he is able to give his activities some useful content and goal. In other words it may be possible for the individual to utilize the *organic drivenness* and direct it into adequate channels. The accomplishments of some of the *organically driven* patients may indeed be remarkable. Although they may often display a multitude of diversified interests they somehow possess great ability to integrate them

4 A. R., American, male. Years ago one of us had the opportunity to observe a then 29 year old banker, for a considerable period, and to see him then from time to time. This person was possessed of a very good, if not productive intelligence, was a very kind hearted man, and had numerous friends. He was a stammerer, had quite obvious facial twitchings, and was rather clumsy in his movements. He was never seen to walk, and literally was always "on the run". His activities were stupendous in variety and amount, he was a voracious reader and an exceedingly prolific writer and partook in an almost unbelievably widespread correspondence.

When seen in a group, one felt that it was a terrible strain for him to sit still without talking or moving or occupying himself with something. On every possible occasion he would jump up, burst out with questions or deliver short speeches, smiling and moving.

That such individuals possess a capacity to overcome so severe a biological handicap and to be able to make an asset out of their disability may appear a constitutional paradox. In this connection a careful utilization of the Adlerian concept of overcompensation occasionally may not be amiss.

We have mentioned the two opposite ways in which these patients may deal with their *organic drivenness*. At one extreme are those who, just a prey to their drivenness, live in an aimless way, at the other extreme are those who master their life despite their handicap. Between these extremes many different varieties are found. Among them are those "bad boys" and "bad girls" who after an attack of Economo's disease make their lives and the lives of their families miserable with their "misbehavior". At the mercy of their *organic drivenness* they indulge in all sorts of undesirable conduct and often appear unbearably malicious. That they give vent to, i.e., that they express their *organic drivenness* in their various asocial activities is

frequently not recognized. Sometimes they are filled with resentment but it would be thoroughly erroneous to explain all their behavior as the mere outcome of resentment against their environment.

Among the cases which we were able to see (and we saw quite a few more than are reported in this paper) there were more children than adults. This observation cannot be dismissed as adventitious. The "behavior problems," or better, the specific personality changes, after Economo's disease are generally found in children, whereas in the adult the Parkinsonian pictures are prevalent. It seems plausible to assume that this difference depends largely on differences of the biological reaction of the nervous system toward the encephalitic process in child and adult. We conjecture that a more intensive knowledge of *organic drivenness* will show that the syndrome described is not infrequent in the adult not only because many of the children concerned survive to adulthood, but also because encephalitis epidemica and the other encephalitides are not the only conditions which produce this syndrome. We believe that there are individuals who are possessed of *organic drivenness* from birth, either as the consequence of a prenatal encephalopathy or injury, or of birth injury, or as a constitutional variant.¹²

These considerations lead to the question of whether cases exist in which *organic drivenness* is the only sign of congenital defect in the brainstem. We have not yet seen such a case, in all our patients neurological signs were present which, as has been stated, indicated brain stem involvement. While some of these signs (e.g., twitching) are not very severe the drivenness, on the contrary, seems to influence deeply the personality as a whole, its behavior, and its experiences. There is no doubt that the significance of *organic drivenness* is enormous for the personalities afflicted with it, but we do not believe that it is the only factor by which the whole personality structure can be explained. However profoundly this whole structure may be influenced by it. The *organically driven* individuals whom we had the opportunity to observe were very different as to their intelligence and temperament, and undoubtedly there are considerable differences also in their impulse life. It is the degree and the inter-action of the *organic drivenness* with other aspects of the personality which are ultimately responsible for the whole picture of the individual.

By dealing with *organic drivenness* as a syndrome we wish to emphasize its significance for clinical psychiatry. By this procedure we fall under obligation to discuss two specifically clinical aspects: (1) the disease processes in which this syndrome occurs, and (2) its differential diagnosis.

¹² The investigation of this problem by genealogical methods would be extremely desirable.

(1) We have repeatedly stated that *organic drivenness* is found in encephalitic processes and we conjecture that it may occur in every process which involves the brain-stem, e.g., Huntington's disease and certain cases of general paresis, brain syphilis, arteriosclerosis, and brain tumors. With respect to general paresis may be mentioned some observations made a few years ago with Doctors Bumke and Bostroem in the Munich Neuropsychiatric Clinic. Several paretics with extrapyramidal symptoms were seen and when Dr. Hugo Spatz investigated the necropsy material of these and other paretic brains he was able to demonstrate typical paretic changes in the basal ganglia not only of those cases which had had extrapyramidal symptoms but in quite a few cases which had not presented such symptoms. One may infer from such observations that some conditions of excitement and violent outbursts in the paretics, clinical manifestations of *organic drivenness*¹³, are at least partially, due to the changes in the brain-stem.

One may wonder whether we are overestimating or exaggerating the significance of *organic drivenness* and its relationship to the brain-stem. As a counter-argument one may adduce the extreme hyperactivity which precedes the lack of initiative and hebeticity in the frontal lobe cases of Pick's disease. It is certainly permissible to compare these patients' restlessness and aimless hyperactivity with the *organic drivenness* derived from the brain-stem and from this comparison, surmise that the decrease of frontal cortex control is the primary source of their hyperactivity¹⁴. This conclusion, however, would have to be qualified to state that lack of cortical control may not increase motor discharge directly but does so rather by removal of inhibition of brain-stem activity. Indeed recent investigations (v. Braunnühl)¹⁵ have revealed that in many cases of Pick's disease not only the cerebral cortex but also the basal ganglia are primarily and characteristically involved. We are of the opinion that the syndrome of *organic drivenness* will only be found in individuals in whom the brain-stem is pathologically changed, permanently or episodically.

(2) From the point of view of differential diagnosis the syndrome of *organic drivenness* probably is not, at least at present, of any great importance in the gross organic brain conditions mentioned. It may perhaps eventually be

helpful in the interpretation of some specific symptoms.

There is, however, a large group of clinical conditions in which differential diagnosis is important, and occasionally rather difficult. Some of the relatively mild cases of *organic drivenness* may by virtue of their overactivity impress the observer at first sight as hypomanic, we have encountered this diagnostic confusion. We deem it necessary therefore to point out some differences between *organic drivenness* and temperamental deviations belonging to the group of the tachythymic and the euphoric hypomanic¹⁶.

The tachythymic and the euphoric show a natural vivacity, they are alert and smart. As a group they almost always have a good sense of humor and a ready smile, their smiling is warm and often contagious. Many of them are happy people, and go about in a world which is open to them and which is entirely theirs. Movements are rapid and abruptness and awkwardness are rare. Their movements appear to be clear expressions of their personalities especially of their characteristic temperament, and fall in line with their mood and mood swings.

The hyperactivity of the *organically driven*, on the other hand is never natural, even when they behave "vivaciously" they never seem to be free of restrictions. They lack humor, frequently to a deplorable degree, and their smiling is rather a kind of stereotyped and frozen grinning. They are not happy people even if successful in life and it is hard for them to come to bearable terms with the world and to remain so. Their movements are jerky, hasty, abrupt, clumsy, and attempts to modify them may make them only the more conspicuous. Since these movements are organically conditioned they are not commensurate with their moods and emotions although under stress the hyperkinesis may episodically increase.

These descriptions cover only the relatively clear-cut cases of both types. Combinations may occur in that tachythymics or hypomanics may, if rarely, have ties and the like, in some organically driven individuals there may be a certain temperamental vivacity (tachythymic) or euphoria (hypomanic). Further detailed observations should enable us to differentiate such cases more exactly.

We must mention that occasionally an organically driven patient may appear so odd as to remind us of a "schizoid," usually the differentiation will not be very difficult. It cannot be denied, however, that there exist schizoid psychopaths, with some tie perhaps, who betray a certain amount of *organic drivenness*¹⁷.

13 We may indicate in passing that in some schizophrenic conditions sudden outbursts and the like may also bear some relationship to organic drivenness. One must not, of course, forget the possibility of brain swelling in such cases.

14 A case in which *organic drivenness* doubtless played an important rôle has been published by Bürger H. Zur Frage der "Crampusneurose". Arch. f. Psychiat., 79, 161-169, 1927. He relates the main symptoms to the brain stem and adds that in view of a progressive dementia in this case the cortex is also involved.

15 v. Braunnühl has reported his own investigations and the research done by other investigators in Bumke's Handbuch der Geisteskrankheiten, 11, 633-715, 1930.

16 We refer to some pertinent considerations made by one of us (Dr. Kohn) in Psychopathic Personalities. Yale University Press, 1931, pp. 175-177, 183 et passim.

17 cf. Lange J. Klinisch-genetologisch-anatomischer Beitrag zur Katatonie. Monatsschr. f. Psychiat. und Neurol., 69, 1-49, 1925. In this paper are reported cases of schizophrenia in which organically conditioned motor disturbances related to the basal ganglia were observed. In some of Lange's cases the brain stem changes were verified at necropsy.

SUMMARY

Cases are presented in which hyperkinesia due to surplus of inner impulsion is the predominating feature. This is termed "*organic drivenness*", its association with neurological signs referable to the brain-stem indicates the locus of its genesis in this region. *Organic drivenness* is found in various encephalopathies, notably encephalitis epidemica, but its incidence in various degenerative diseases of the nervous system as well as the probable existence of constitutional types is emphasized. Various differentiating criteria from the hyperactivity of hypomanic and euphoric individuals are discussed. It is in accordance with his personality make-up that the hyperkinesia and the *organic drivenness* are experienced by the individual.

DISCUSSION

DR. HODSKINS This has been a very interesting paper to me, not only because I have seen some of these cases that Dr Kahn describes, but in my work with epileptics this syndrome merges very closely into the epileptic syndrome and the things that epileptics do, the neurological symptoms they manifest, and the things we find in their brain stems at autopsy.

DR. C MACFIE CAMPBELL I wish to endorse what you have said, Mr Chairman, that Professor Kahn's paper has been of extreme interest. It touches a subject that is familiar to all of us, whether working with adults or children, these hyperkinetic individuals with a variety of neurological features. Dr Kahn has emphasized the fact that the organism with focal damage to the part function manifests reactions that can only be explained by the total personality, and that we are apt to concentrate too exclusively upon the focal disturbance of function. A good analysis of a series of organic cases with the separation of those symptoms due to the focal disturbance of function from those symptoms due to the total personality is of great value.

The field that is illuminated by this paper is of wide extent and we are very much indebted to Dr Kahn for the stimulus he has given us.

DR. MYERSON I echo Dr Campbell's words as to the powerful stimulus which Dr Kahn's paper represents. However, my stimulation is in two directions, one of pleasure and agreement, the other of question and rather marked disagreement.

I think that encephalitis has probably illuminated the genesis of the personality more than all the psychological work that has been done. I say this with all due respect to the psychologists who are here present. It is probable that the personality changes are due to lesions of the brain stem and that they are often associated with hyperkinesia, such as athetoid movements, chorea, etc. I think it is also well to emphasize that in general paresis and other organic disease types, the brain stem is as much involved as the cortex. For example, in work done by Dr Raskin and me at the Boston State Hospital, the hypothalamus and the brain stem were more involved than the cortex. Thus far, anyone must be in agreement with Dr Kahn and be grateful to him for calling our attention to the relationship of personality and hyperkinesia to the brain stem.

The difficulty, however, is this in respect to the cases he cites. In the first place, I do not understand that they were in any way related to past encephalitis. In the second place, there was no autopsy work recorded, so that we might have some objective linking up of the hyperkinesia and personality alterations with lesions. I do not see how any theory can lack the objective fact of pathological work and not remain suspended in the air, so to speak. In the third place, we can, I believe, explain as much of these cases by the let go of the cortex as by any brain stem lesions. A good deal of the symptomatology of organic brain disease is due to the release of mechanisms of a lower order by the injury done to centers of a higher order. Thus, when the cortex is injured, one gets twitchings and one might, I suppose, get an excessive drive since the individual might well be at the mercy of every impulse that came his way. Skill is a cortical rather than a brain stem development, and the awkwardness cited by Dr Kahn might well be explained by cortical injury. Even the severe psychoneurosis may show hyperkinesia, twitchings, jerkings, and restlessness comparable to his increase in drive. Some of the cases he describes do not seem to me to have any relationship to brain stem, for example, the banker he cites is a tremendous reader, a tremendous writer, looks after a huge amount of correspondence, and all his driving has a strong intellectual slant which cannot, at the present time, be linked up with the brain stem. Moreover, Dr Kahn assumes a plus set of symptoms, that is, the brain stem is overstimulated. There is hardly a sphere in neurology in which we know anything at all about plus diseases. Almost all the symptoms and syndromes represent deficiency with disturbance of the harmony of functions as a result.

May I say this, too, that the organic drivenness is rather a doubtful term in this connection. Organic drivenness should include a drive toward sex, nutrition, self preservation, since these are the great organic drives.

Let me state that I am grateful to Dr Kahn for his interesting paper. That I am in sharp disagreement with much that he postulates does not lessen my indebtedness.

DR. McPHERSON As I have observed this group of patients, which is familiar to us all, it seems to me there are distinctly two elements concerned, one, with a release of movements, and the other, with the reaction of the individual to that release. The paper is very well written but I have some sympathy with Dr Myerson's feeling that possibly we are allowing the concept to be carried too far if we immediately jump to the conclusion that the entire picture is due to the injury to the brain stem. We know very little of the mechanism by which motor phenomena are released in such injury, but we can explain a great many of the hyperkinetic phenomena as release. It does seem that it is stretching the concept to include all of the reactions as a positive syndrome of the brain stem, as Dr Kahn seems to imply.

DR. EPSTEIN I haven't very much to add to what has already been said except to emphasize that from a purely organic standpoint I think the whole business of hyperactivity is too widespread to be localized in this very small area of the brain stem. I should like to see a good many autopsy reports before I shall be convinced that the trouble lies there.

DR. CORIAT In listening to Dr Kahn's paper and to the various discussions, I am inclined to agree with the discussants. It appears that when one re-

constructs the hyperkinetic phenomena which result from the extrapyramidal lesion, that the extrapyramidal lesion has utilized certain elements of the personality and exaggerated them so that the cases as related may well show certain hypomanic trends or even schizophrenic trends provided that the individual in whom the brain stem lesion had occurred had had these trends in a latent form. This same mechanism of utilizing an organic lesion is also often found in the symptoms of the conversion hysteria. If such an individual had these trends, certain events in the individual's life or even certain emotional disturbances even without brain stem lesion, might have precipitated a typical hypomanic or a schizophrenic psychosis.

DR. HEALY I feel very grateful to Dr Kahn for having given us such a clear presentation. All of us who have worked much with young people have seen individuals of the type which he describes. At present we have under observation a young boy who comes in this category. He seems to have presented this phenomenon of hyperkinesia since birth. As a child of even one month of age he was noted as being excessively restless. He has maintained this characteristic with unvarying trends until the present, when he is nine years of age. Can there be any doubt that there must be something organic in the situation? One cannot help being impressed with the possibility that the pathology originated before birth. As the single member of a family group who presents abnormality he is a most disturbing factor at home, in school life, and elsewhere. His restlessness or drivenness causes him not to be able to conform to any ordinary regulations. For example his inability to sit still at mealtimes and his unwillingness to go to bed at any ordinary hour is most annoying. And yet his tremendous overactivity does not seem to create any fatigue symptoms. As in the cases that Dr Kahn cites this boy is not a typical hypomanic; his urge to activity is on the physical side only—he does not indulge in any flight of ideas.

In regard to the essential pathology in this picture I am inclined to agree with what the other discussants have said and will not reiterate the points which they have made.

To go a step farther with what Dr Kahn has said in relationship to the experience of the driven individual with his own overactivity there is to be added the fact that the social environment plays its part in creating emotional attitudes. For a moment we may take this case I have spoken of. He finds himself at odds with the world. He has been dealt with in all sorts of ways overprotective and severe. Even in the family life it has been difficult to know how to handle him and alternative measures have been used. A circular response is set up: the boy meets the environmental issues with realization that he is an abnormal person, and becomes unhappy and surly. His twitchings and bizarre movements, although not excessive, mark him as a peculiar person easily recognized as such even by his playmates. He proceeds to react, very naturally, with undesirable attitudes which play a prominent part in what we may call his personality characteristics. Thus it is not entirely how the individual looks upon himself that, as Dr Kahn says, forms the picture of his personality trends but also his reactions to perceptions of what others feel toward him.

DR. COHEN It is natural I suppose that my attitude with respect to some of the points raised in the discussion should be defensive. I have had, and have appreciated extremely, the opportunity to watch the concept of organic drivenness grow in

Dr Kahn's mind. There are two general points which I would like to mention if only to reemphasize first, the relationship of encephalopathy to organic drivenness, and secondly the significance of organic drivenness in its purely psychological, that is experiential aspects.

The frequent occurrence of organic drivenness in encephalitis cannot be dismissed as accidental. It is very probable that in many cases in which no history of infection was elicited an unrecognized encephalitic process had at some time existed. On the other hand, it seems plausible to assume that there are many cases in which this is not true and that there is no at least demonstrable, focal pathology. Such cases would argue for a constitutionally conditioned organization of the nervous system in which organic drivenness is the predominant characteristic. Here again the locus of origin of the drivenness in the absence of postmortem material if such were to be enlightening must on the basis of concomitant symptoms and signs be ascribed to the brain stem. In either case encephalopathy is present the question as to whether it is anatomical or physiological is probably only a matter of relative emphasis.

Secondly and perhaps more importantly for psychiatrists are the psychological components of this condition. The organic drivenness is experienced differently by every patient by virtue of the differences in personality make-up of each patient. That such experiencing is aimed toward concealment, or at least socially acceptable disguise of this drivenness is not surprising and indicates as Dr Healy has pointed out, the importance of environmental factors. Furthermore it is probable that it is only in those cases in which experiencing has been changed in the sense that asocial expressions occur that the syndrome and its underlying cause become recognized at all. Here the qualitative difference of organic drivenness from the impulsive outbreaks of schizophrenia and the euphoric excitement of the manic depressive may become clear: the fact that the way of experiencing in each of these states is probably different gives to the surplus of inner drive manifested by each its peculiar quality.

DR. KAHN I am very grateful not only to those who find something acceptable in this concept of organic drivenness but also to those who disagree. I am especially grateful for Dr Merson's remarks which put me under obligation to make some explanations which may not be entirely ripe. I would like to mention that I appreciate the remarks of Dr Hodskins who has seen the picture of organic drivenness in some of his epileptic patients.

Dr Campbell has indicated that infections disease not only encephalitis may bring organic drivenness to the fore. That certainly is the case and I mentioned it only in passing that one must think of permanent as well as episodic changes in the brain stem as they may occur in some infectious disease. Dr Merson's reproach is that we have no autopsy material. Of course we have to admit this but isn't there a huge amount of autopsy material in the literature written since von Economo's first publication? Dr Coriat has said that the hyperkinesia may bring other personality trends into the foreground. I have said and I wish to repeat that the organic drivenness indeed is not the whole personality. We have to find out how the personality experiences this very organic drivenness. That, of course brings up the problem Dr Healy mentioned. We are perfectly aware that the organically driven are living in a world in which they are not only experiencing themselves and this world but

are being experienced by the people living with them. That they encounter all sorts of difficulties goes without saying. That would not, however, fundamentally change our opinions as to this very organic drivenness.

I guess the point at issue is this: Are we entitled to relate this organic drivenness to the brain stem? I think that with caution we are able to do this since, for the time being, we desire to discover diagnostic clues for this organic drivenness. These cases of ours, including the lady and the banker, and I hope Dr. Myerson will take this in good faith, have brain stem symptoms, still, they have cortex and other nervous system structures. They do not experience with their brain stem alone, since they haven't the brain stem alone.

I think I may say what I have in mind with regard to brain localization, begging you to accept this as cautiously as I want to say it, taking nothing for granted, since it is scarcely more than a guess. One may look at the structure or make-up of the personality from various points of view, for example from the point of view of the structure of the nervous system. Let us do this for a moment. There are various areas in the nervous system which may be taken into special consideration, one, the cortex, two, the so-called brain stem, three the so-called vegetative system. I am perfectly sure that all of these areas have something to do with both activity and passivity. I venture to say that the cortex, so far as activity is concerned, seems to be mainly responsible for initiative, that the brain stem is especially concerned with regulation, and that the vegetative system deals mainly with what is quite generally considered vitality. We may assume for the moment that in the case of disturbance of one of these big centers there are two possibilities, a plus and a minus. In the case of cortex involvement we see individuals either with the minus or the plus in the form of under or overactivity as a kind of under or overinitiative so to speak. In the regulat-

ing function of the brain stem, all of us know the minus disturbance. In the vegetative system there is on the minus side a lack of energy, and on the plus side the surplus of vitality. It would be of great interest eventually to exploit the ramifications of these suggestions, especially those concerning the various relationships of the vegetative system. In other words, we commonly see plus and minus disturbances of activity related to the vegetative system. Of course it is perfectly possible that a person possessed of my beloved organic drivenness may also all from some disturbance in the cortex, or have some minus or plus vitality, in such cases we would see, of course, a very complicated picture.

The justification for the concept of organic drivenness is the attempt to isolate one factor, and in this way to restrict the concept as much as possible, it is equally necessary at the same time to broaden the concept in so far as the hyperkinesis is experienced by the personality concerned. So, fundamentally, I cannot feel that I agree with Dr. Myerson.

This leads to the other question Dr. Myerson asked: How about sex? I cannot now give an definite answer. I am unable to tell you of the relation of other centers, per se, I do not think that all sorts of sex experience and behavior are or need be found in these brain stem cases, in these cases of so-called organic drivenness, because, as I wish to repeat, the organic drivenness does not tell the whole story. The organic drivenness is only one conspicuous factor related to the brain stem, a factor which is experienced and, which it has been my purpose this evening to emphasize. At any rate, if we can find out what the organically driven individual is doing, thinking, feeling, experiencing about his organic defects, it may help us a lot it may increase our knowledge of the organic diseases with which we are working. It may offer an interest in the shape of a bio-experiential point of view, which sometimes, at least, seems to recede too much into the background.

MEDICAL PROGRESS

PROGRESS IN DERMATOLOGY

BY HARVEY P. TOWLE, M.D.,* AND JACOB L. GRUND, M.D.*

ALLERGY

THE list of diseases called allergic is steadily growing, as witness Dr. Clarke's paper.¹ No longer does allergy mean only asthma, hay fever, eczema, urticaria and angioneurotic edema. According to Clarke, allergy enters into nearly the whole field of medicine. In his present article, Clarke includes in his list practically all cases of urticaria, angioneurotic edema, seasonal hay fever, most cases of uncomplicated asthma, eczema not due to direct irritation, many cases of rhinitis and recurring bronchitis, most cases of mucous colitis, probably, and some cases of gastro-intestinal symptoms. He also suggests that pylorospasm and gastric and duodenal ulcer may be allergic in origin as well as migraine and Menière's disease. It is a proba-

bility, he says, that certain cases of epilepsy are allergic, and, also, certain cases of arthritis. Evidently, the dermatologist must enlarge his idea of allergy.

Anything which will throw light upon the nature of allergy is of interest to the dermatologist, even though the source of the light is not derived from dermatology itself. Pearson² has investigated the skin reactions of fifty asthmatics and compared the results with the reactions of fifty normal controls. His object, he states, was to determine the immediate dermal response to urinary "proteose" and, in the event of obtaining positive reactions, to correlate them with the dermal responses to peptone, histamine, and protein, and to determine the clinical significance of the observations. He found that,

1. Asthmatic patients tend to give nonspecific skin reactions with solutions of proteins or protein derivatives containing 10 to 20 mg. of nitro

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gen per 100 cc In the control group this tendency was much smaller

2 Making due allowance for this tendency, it was found that 38 per cent of the asthmatics gave significant reactions to their own urinary proteose

3 If the asthmatic series is subdivided into two groups, the one composed of patients showing sensitivity to foods or inhalants and the other showing no allergic sensitivity, 50 per cent of the allergic group gave significant reactions to their own urinary proteose as compared with only 15 per cent of the non-allergic group

4 Of the control series only 2 per cent gave significant reaction to their own urinary proteose

5 Solutions of asthmatic proteose produced significant reactions in 32 per cent of the controls Sixteen per cent of these even reacted to a dilution as weak as 1:100,000 It was found that one-half of the latter group had allergic family histories

6 The skin response to histamine was remarkably constant in both normal and asthmatic persons

7 It follows that the skin reactions to proteose are not due to histamine

Pearson concludes that the evidence points to the skin reaction being due to some unidentified toxic substance The possibility that allergic subjects are actually sensitized to such a substance has not been definitely disproved he says

Ernstene and Banks's investigations bear the same relationship to the study of allergy as do Pearson's² in that they deal with allergic diseases pruritus, urticaria and also with the use of histamine which is often used as a pharmacological test of sensitiveness

Six patients with pruritus associated with urticaria were treated with small injections of histamine and so were seven patients with pruritus due to other conditions In three of the six patients with pruritus and urticaria there was relief from the pruritus, and even from the urticaria, but in only one case was the relief lasting It is noteworthy that a repetition of the histamine therapy in the cases of relapse was quite ineffective The patients seemed to have acquired a tolerance for the drug which inhibited a response at all comparable with that obtained in the first course

Of the seven patients with pruritus without urticaria, three were entirely unaffected and four were only partially and temporarily relieved

The writers' conclusion that the results warranted further investigation seems hardly justifiable

Another work bearing on the nature of allergy is that of Werner Jadassohn⁴

In view of the importance that has been attached to the presence of eosinophils in the

wheel as a positive mark of allergy, there is a peculiar significance in the results of Jadassohn's studies He verified Berger and Lang's observations, that eosinophils are extraordinarily numerous in and around the vessels in wheals produced by the application of an antigen He also confirmed their observations regarding eosinophils in the histamine wheal, although he found more perivascular leucocytes than they, perhaps because he used a stronger histamine solution

But Jadassohn went farther He examined, for their eosinophil content wheals (a) mechanically produced in a woman with dermatographism (b) a morphine wheal, (c) an atropin wheal (d) a pilocarpin wheal The result was most interesting No one would consider the wheals from morphine atropin or pilocarpin as allergic reactions, yet the histologic appearances were not to be distinguished from those of so-called allergic wheals There was the same collection of intravascular and perivascular leucocytes most of which were eosinophils Jadassohn regarded the reaction as of purely local origin, not as one depending on a general increase of eosinophils in the blood None of the patients had a blood eosinophilia

It would seem that but one conclusion is possible that, contrary to the general assumption, local eosinophilia in wheals is not the sign manual of allergy

Lester Hollander⁵ reports a case of urticaria due to senna leaves He inquires if it is "an example of an acquired hypersensibilization and is comparable to the experiments of Professor Bruno Bloch"

The case is that of a woman who had taken senna leaves as a laxative for fifteen years without noticeable trouble when suddenly she developed urticaria which gradually increased in intensity When she first consulted Hollander she had hives over the legs for three months, always appearing at night about two hours after going to bed At first the search for the cause was entirely fruitless although it included food tests blood examinations, reviews of her habits, her clothing, and several other things Finally, the definiteness of events attracted his attention and led him to eliminate the senna leaves The result was immediate The urticaria ceased to appear As an experiment the patient was again given senna to chew after she had had no urticaria for two weeks The result was positive The urticaria returned and followed the same course as before

If, as Sontag maintained some twenty or more years ago, scarlet fever is not a disease entity but merely a manifestation of hypersensitization to bacteria in the tonsils we may assume that the symptoms bear some relation to allergic manifestations From this point of view, therefore, von Kostyal's study of the Relations between Acetonemic Vomiting and Scar-

let Fever⁶ bears upon that relationship The question is how

Von Kostyál calls attention to the circumstance that, in scarlet fever, there is nearly always vomiting, and nearly always acetone in the urine Further, it is worthy of note, that, in the affections of which scarlet fever is most prone to be the complication, such as burns, tonsillitis, and postparturition conditions, acetonemia is also present Menstruation, likewise, is accompanied by acetonemia and by impaired liver function Building on this foundation, his argument proceeds Diet, he says, may play an etiological rôle in scarlet fever, particularly if there is present an anaphylaxis to any especial food, for such reaction impairs the liver function and thus renders the organism more susceptible to toxins It might be well, he says, to investigate whether diet can influence the Dick test Von Kostyál thinks that the incidence of concurrence of acetonemic vomiting and tonsillitis is practically the same as that of scarlet fever That, then, is a strong suggestion of a relationship between the two, and is evidenced by the fact that it is possible to arrest acetonemic vomiting by an intravenous injection of convalescent scarlet fever serum

TUBERCULOSIS

The effect upon tuberculous processes of a salt-free diet such as Gerson, Hermannsdorfer and Sauebruch advocated, still engages the attention of some investigators One of the most recent is Bertaccini⁷ who, using animals for the experiment, fed one group with a salt-free diet and a second group with a salt-containing diet To make the experiment more convincing, he gave the second group additional sodium chloride by intravenous injection Both groups were inoculated with bovine and human tubercle bacilli He could not find that the presence or absence of salt made any difference in immunity, as all the animals of both groups contracted tuberculosis, as was proved by autopsy

Bommer⁸ takes a more optimistic view of the inhibiting influence of a salt-free diet upon the activity of the tubercle bacillus He began the dietary treatment at the Giessen Lupus Institute in 1928 and has since treated a large number of cases of skin tuberculosis He cut out common salt entirely, restricted meat, and used vegetables largely as a source of protein supply His diet was generous in fat but poor in carbohydrates An abundance of fresh fruit, vegetables and salads was permitted He reports that under such dietary treatment tuberculous skin foci healed completely, even to the drying up of skin ulcers in three or four weeks Moreover, he found that lupus of the mucosa responded quite as well as lupus of the skin

In some cases, to avoid the unpalatableness of food prepared entirely without salt, he used a

mixture of common salt and other physiologically equilibrated salts, the latter supposedly removing the undesirable toxic effects of the common salt

He explains that the favorable effects of a salt-free diet are due to its action upon the vessel walls by which the disturbed water exchange between the blood vessels and the tissues is restored The diet also restores the cells of the capillary walls to normal function Under the salt-free diet, edema diminishes and venous stasis disappears In support of this argument, he points to the obstinate behavior of children with pasty, cyanotic skins in whom the vascular system is primarily defective, and in whom it is necessary to prolong the dietary treatment unduly in order to obtain an effect upon their tuberculous skin lesions

Eller and Rein⁹ studied the effects of an equilibrated salt diet on two cases of lupus vulgaris, two of lichen planus, four of chronic eczema, and two of acne vulgaris They conducted their experiments by alternately giving the patients, every three or four days, a diet free from salt but with an equilibrated salt of potassium, calcium, and magnesium as a substitute, and a diet containing a measured amount of sodium chloride According to their observations, all cases except those of lupus showed a definite improvement when the equilibrated salt was used and no sodium chloride, and a definite exacerbation when sodium chloride was returned to the diet The failure to influence lupus they attributed to lack of hospitalization and the failure of the patients to carry out dietary directions conscientiously

Ever since Lowenstein announced that he found tubercle bacilli regularly in the circulation in milary tuberculosis, in far-advanced tuberculosis, and in 50 per cent of the cases of rheumatic fever, others have tried to duplicate his findings Haymaker, Ekhardt and Freund¹⁰ report absolute failure in 38 cases investigated, although they followed Lowenstein's technique carefully In neither culture nor guinea pig inoculation were they able to discover tubercle bacilli

Benedek's results¹¹, too, throw doubt on the accuracy of Lowenstein's observations Benedek studied four cases of tuberculosis cutis luposa, 1 of tuberculid, and 2 of lupus erythematosus In each case blood cultures were made according to Lowenstein's method and, as a control, tissue cultures according to the method of C Kiel The tissue cultures were positive for tubercle bacilli in the four cases of lupus, but were negative in the other diseases Once he obtained a positive culture from a case of lupus but later attempts were negative In the one positive blood culture the organisms grew sparsely and in subcultures lost their typical shape and acid-

fast qualities. On the other hand, the organisms in the tissue cultures grew abundantly, both in the original culture and in the subcultures.

The question has been asked, does military tuberculosis attack the skin? Geipel sought the answer. He reports¹² that he found involvement to occur only in nurslings and young children. In children, the point of attack was the subcutaneous tissue in which tubercles developed. In infants and very young children, tubercles were found in the corium and the adjoining epidermis.

Jesionek¹³ starting with the proposition that light baths may have a beneficial or harmful effect upon tuberculous foci in the skin and within the body, gives an interesting dissertation upon the anti-tuberculous function of the skin and the effect of light baths upon it. His experimental studies have indicated to him that the skin actually has an anti-tuberculous function and is the source of the natural defense substances of the organism against the tubercle bacillus. Robert Koch, he says, has called attention to the differences in the reactions exerted by the intradermal and intracutaneous injection of killed tubercle bacilli. Jesionek says that in civilized human beings these natural anti-tuberculous defense substances are deficiently elaborated by the skin because only a small portion of the skin is adequately exposed to the stimuli of light and air. The light and air bath removes this obstacle and frees the skin from the confining influences which reduce its metabolic functions. The first stimulus is provided by the lowered temperature which by the movement of the air and the influence of the light increases pressure and thereby, the perfusion of the skin by way of the parenchyma cells. Jesionek sees in this regulation of the blood supply in the skin the most important biologic effect of the light and air bath. Such perfusion and increase in pressure enable the skin cells to produce anti-tuberculous and tuberculo-lytic substances. But if the true value of the light and air bath is to be obtained it is essential, he says, to avoid light induced inflammation of the skin and, also, undercooling and overheating, for such influences paralyze the parenchymal cells of the skin.

O'Donovan¹⁴ reports a fatal case of sarcoma which developed on a lupus scar after heavy treatment of the lupus with Roentgen rays. Two months before death there were symptoms of internal involvement. The patient complained of weakness, pain below the heart, and of shortness of breath. There was fluid in the right thoracic cavity which contained leucoerythrocytes and endothelial cells. The rays showed secondary deposits in both lungs. In discussing this case, O'Donovan says, that it is recognized that there is a close similarity in the clinical development of oc-

cupational tar carcinomata and of Roentgen carcinomata, that, experimentally, both carcinoma and sarcoma have been produced in animals by the same irritant, hence, as lupus carcinoma has increased in frequency since Roentgen therapy was instituted there is an antecedent probability that sarcoma might develop under similar conditions.

ERYTHEMA NODOSUM AND TUBERCULOSIS

There have been published since the last Progress a number of studies on the relationship of erythema nodosum to tuberculosis. One of the first was that of H. Ernberg¹⁵ who examined 200 cases, most of them in children. Thirty-nine unselected cases were given a particularly thorough consideration. All of them (100%) were found to have demonstrable foci of tuberculous infection chiefly in the pulmonary region. Because of his study of the disease, Ernberg reached the conclusion that erythema nodosum is an autogenous tuberculin reaction of an infected organism and is therefore, in reality a manifestation of tuberculosis. For this reason, all cases of erythema nodosum should be given a careful Roentgen examination and should be treated as cases of tuberculosis. The prognosis is good.

Following Ernberg's lead Dickey¹⁶ made an exhaustive study of 16 cases of erythema nodosum in children under fifteen years of age. The majority of the patients were females. If one considers the intracutaneous test with tuberculin as specific then all in the group were tuberculous, for all were susceptible to intracutaneous injections of artificial tuberculin and to minimal doses of it. In fact four of his cases developed typical attacks of erythema nodosum. Perifocal chest reactions were demonstrated by Roentgen ray examination in the majority of the cases. While earlier students of the disease maintain that the streptococcus is the etiological factor in the disease, Dickey maintains that, when present, erythema nodosum is to be regarded as evidence of an early infection with the tubercle bacillus, or as reinfection unless there is definite evidence to the contrary, notwithstanding the fact that it has been definitely proved that erythema nodosum may occur in children in the absence of allergy to tuberculin and, probably therefore, in the absence of infection. The idea of a streptococcus infection can be sustained in only a very small percentage of cases.

Begg's observations¹⁷ concerned only four children from one to five years of age but are, nevertheless, interesting in that there is a definite history of exposure to infection. The four children had been exposed for five weeks to a patient who died of military tuberculosis eight days before the first case of erythema nodosum developed. All the children reacted positively to the intracutaneous injection of tuberculin and all gave radiographic evidence of a hilar infec-

tion Begg considers these cases to be allergic manifestations of a recent tuberculous infection.

Gordon¹⁸ relates the case of a child of three in whom the development of erythema nodosum seemed to be the precursor of the invasion of the general system by the tubercle bacilli. A week after a lesion of erythema nodosum had appeared a small nodule appeared on the skin. At the same time the sub-maxillary gland was definitely enlarged. Four and one-half months later the nodule on the chin was definitely proved to be a lupus.

Cruise¹⁹ also inclines to the belief that the association of erythema nodosum and tuberculosis is not merely a coincidence. He found that in seven of erythema nodosum a definite diagnosis of tuberculosis could be made, that in four cases it could be strongly suspected, and that in more than one half of his cases their erythema nodosum had developed during or after their connection with an institution devoted to the care of tuberculosis.

Lesné, Boguen and Guillain²⁰ observed a series of 39 patients with erythema nodosum over a period of twelve years. Forty-three per cent of the patients gave a definite family history of tuberculosis. Every case, examined by the Roentgen ray, showed calcareous lesions with hilar involvement in infancy as the primary lesion. All reacted positively to tuberculin. At the end of the twelve-year period twenty-two of the thirty-nine were well, even though some had had a serious extension of their original tuberculosis infection. None had had miliary tuberculosis. None had had tuberculosis meningitis. None had died. Therefore, they concluded that the development of an erythema nodosum in childhood with evidences of tuberculosis indicates a relatively good prognosis concerning the tuberculosis.

LUPUS ERYTHEMATOSUS

Three or four articles have been published during the past year which give particular consideration to the relationship of the disease to tuberculosis.

Thus Pessano²¹ reports that out of 100 cases studied 83 had a tuberculous family history. It is to be noted that he obtained better results in treatment with the bismuth compounds than with the gold salts.

J. M. Lyon²² reports two fatal cases of lupus erythematosus in children which came to autopsy. In neither case was there clinical or pathologic evidence of tuberculosis. Apropos of the fatal issue of these cases, it is noted that the following symptoms of acknowledged import occurred: erythematous cutaneous lesions, rheumatoid pains, hemorrhagic tendencies, high fever, and leucopenia.

Roxburgh²³ reports five fatal cases of which three were autopsied. There was neither evi-

dence nor the history of tuberculosis in any of the cases. Roxburgh says that these fatal cases start from a chronic, localized type, that they are more frequent in women, and that they usually occur between the ages of 20 and 30 years. The presence of arthritis, arthralgia, muscular pains, albuminuria, a purpuric eruption, and a high fever are of bad prognostic significance and suggest the onset of a fatal ending. Death occurs in from one to four months after the beginning of these symptoms and is usually caused by a streptococcal septicemia.

The Paris Correspondent of the *Journal of the American Medical Association*²⁴ has written an explanation of the untoward symptoms and accidents which may accompany the gold therapy. He writes that the harmful effects are due to the action of the drug on the components of the blood, on the endothelium of the capillaries and reticulo-endothelial tissues. The accidents most commonly observed, according to the reporter, are agranulocytosis, purpura hemorrhagica, icterus, nephritis, and aplastic anemia. The variety in the accidents is explained by the selective action of the drug on the various constituents of the blood and blood vascular system. If the toxic effect is exerted chiefly on the red blood corpuscles there occurs a grave anemia, if on the white corpuscles an agranulocytic syndrome. If it affects the blood platelets and the endothelium of the capillaries, the signs are those of purpura hemorrhagica.

IRRADIATION THERAPY

Although much has been published in this field there is little that is new. Therefore in this Review we have included but a few sample papers as illustrations of the type of work which is steadily going on.

Webster²⁵ has treated a number of inflammatory conditions by irradiation. He reports good results in furuncle, carbuncle, whitlow, and erysipelas. The favorable effect, he believes, is due to the destruction of the organisms combined with a reaction akin to inflammation which is manifested by an engorgement of the blood vessels and a diapedesis. Also, the protein shock which is produced by damage to the blood and tissue cells adds its beneficent action.

Van Oettingen²⁶ adds his testimony as to the favorable influence of Roentgen therapy of erysipelas. Sixty-four out of 78 cases treated during the past six years showed an immediate, favorable response to irradiation by a definite lowering of the pulse and the temperature. His method was to give from one-tenth to one-fourth erythema dose applied in such a manner that it included the whole diseased region plus a small margin beyond. If the first treatment had no effect, a second was given which was usually enough to produce visible improvement.

Lenk²⁷ reports the results of an interesting experiment in the treatment of warts by the

Roentgen ray, which is one of the most popular methods in use. "But," he points out, "its results have been almost equaled by the treatment by suggestion." "Could it not be that the favorable results of irradiation should be largely attributed to suggestion?" he asks. He sought the answer by giving simulated treatments of the Roentgen rays avoiding all semblance of verbal suggestion and choosing as subjects for his experiment, cases of juvenile warts because they respond the more readily to Roentgen therapy than the verruca vulgaris. He found that although a considerable number did respond to his simulated treatments nevertheless a majority did better with real exposures than without.

Niles²⁸ undertook an investigation of the question as to whether the Roentgen ray treatment of acne increases scarring. To this end he treated with the rays but one side of the face of forty patients with acne, employing a placebo on the other side. In 57 per cent both sides of the face, the rayed and the not-rayed the scarring cleared equally well. In 5 per cent it was greater on the untreated side and in 3 per cent on the treated. Niles claims that these figures definitely disprove the claim that in acne Roentgen ray predisposes to increased scarring. "The percentage of cures," he says also, "was considerably larger in this series when both sides of the face were irradiated."

Richards²⁹ laments the practice of operating upon cases of external cancer before treating them with the Roentgen rays. Previous treatment by surgery, caustics or electricity so complicates conditions as to make it unnecessarily difficult to accomplish a cure by irradiation. "This is especially true," Richards says, "if the previous treatment has been unsuccessful." In such cases the possibility of completely and permanently healing the lesion is definitely diminished and may even be lost. The radiologists feel that preliminary surgical excision is unnecessary. The results of irradiation are better.

The surgeon performs sympathectomy for disturbances of the vasomotor system. The radiologist attempts to attain the same effect by radiation of the deep sympathetic spinal ganglia. Langeron and Desplats³⁰ employed Roentgen irradiation of the suprarenal and cervical sympathetic regions in 41 cases of vasomotor disturbances of the lower extremities. They employed a 500 Roentgen unit once or twice a week and report good results in Raynaud's disease, acroparesthesia, erythromelalgia, posttraumatic disturbances and trophic disturbances associated with a general sympathetic disturbance. The authors thought that possibly irradiation of the suprarenal region is preferable for the lower extremities and of the region at the level of the first dorsal vertebra for the upper extremities. They think that probably there is little difference between the two and therefore advise treat-

ing them simultaneously. In conclusion they issue a warning that the treatment must be carried on with caution, that, as the aim is to reestablish a disturbed sympathetic equilibrium, one must watch out for an abnormal excitability of the sympathetic and its reactions to the doses given.

Several times in previous reports reference has been made to the discussion which has been going on as to the properties of the Grenz ray and its efficacy in the treatment of diseases of the skin. Muskatblit and Ouspensky³¹ have added to the discussion facts derived from their experiments with the use of the Grenz ray as a fungicide. They are not enthusiastic about the results. Although they administered doses fifty and even seventy times larger than the average single dose they could not succeed in killing the organisms.

LICHEN PLANUS—PSORIASIS

Various theories have been put forth from time to time to explain the etiology of lichen planus. Opinion has seemed to favor the theory of disturbance of the sympathetic system. Now come Jacob and Helmbold³² with a theory of a bacterial origin evolved from their observations on 28 cases. In 25 they isolated on semi-solid dextrose serum agar containing cubes of human tissue a gram-negative anaerobic bacillus. "For successful cultivation of the organism," they say, "the serum used must be inactivated at from 56 to 60 C for a number of hours." They report that the organism was not found in normal skins nor in a number of other papular diseases examined as controls. In a few instances they succeeded by inoculation of the human skin with the bacillus in producing lesions which clinically and histologically conformed to the accepted criteria of lichen planus. The bacillus could easily be demonstrated in the sections in the exudate of the lichen planus lesions after an incubation of forty-eight hours or more.

These findings if confirmed, will upset certain previously entertained ideas concerning the disease. For example how shall we explain the results obtained by such observers as Langeron and Desplats³⁰ noted above?

The findings are also at variance with those recently reported by Jansion and Guillaud-Vallée³³ to the Société Médicale des Hôpitaux de Paris. They reported that they had established through a large number of observations, that "all persons affected with lichen planus or with psoriasis present the reactions of a mycotic allergy."

Thus certainly is a new conception of the etiology of lichen planus. Yet, according to Jansion and Guillaud-Vallée³³, the coexistence of an epidermophytosis and of a trichophytosis is not rare in such patients. They explain the

manifestations of lichen planus on the buccal mucous membrane. So far Jausion has found the tricho-epidermophytic skin reaction positive in every case he has examined, whether the eruption was cutaneous or buccal or both. Nineteen of twenty-one cases are reported as having been cured and two as greatly improved by injections of a polymycotic vaccine.

Jausion and Guillaud-Vallée, moreover, assert that the observations reported concerning lichen planus apply as well to psoriasis in a large majority of cases. He studied 54 cases of psoriasis carefully and obtained the following findings. Thirty-seven (68%) of the psoriatics were at the same time carriers of epidermophytosis or mycotic intertrigos. Forty-four (80%) gave strongly positive reactions to a mycotoxin. Forty-five of the fifty-four cases responded to mycovaccinal treatment. Twenty-nine cases were completely cured by the vaccination alone, without other treatment, although it required from fifty to seventy intramuscular injections to accomplish this. The injections are painless and without general reactions. It is thus shown, the reporters conclude, that psoriasis in these fifty-four patients often manifested itself as a mycosis but more often as an epidermophytid. They admit that other antigens may produce an eruption of psoriasis, such as a streptococcus toxin. Psoriasis, then, is a cutaneous reaction of mycelian origin which explains why it will disappear as a result of not only chemotherapy but also of specific polymycotic vaccine therapy.

May it be that there is a real relationship between the more or less favorable results obtained by the injection of scale extracts reported by various American investigators and these findings reported by Jausion and Guillaud-Vallée³³?

Wong³⁴ now reports a series of ten cases of psoriasis treated by the injection of psoriasis scales. He weighs the scales and to each 10 mg mixes 1 cc of sterile physiologic sodium chloride solution. He reports that five of the ten patients were definitely improved, one being cured. One was slightly improved. Four were not affected.

As opposed to the theories just advanced, Grutz and Burger³⁵ report that their studies indicate that the underlying cause of psoriasis is probably a disturbance of the fat metabolism. They offer two hypothetical explanations. A. That the fats, which are a physiological requirement of the skin, are eliminated through the capillary system in excessively large quantities, and, on entering the epidermis, produce the psoriatic manifestations. B. That possibly non-physiologic or irregularly composed lipoids are the cause. In both instances, they say, the cutaneous manifestations could be considered as an inflammatory reaction to the pathologic supply of lipoids.

"This interpretation of psoriasis," the authors declare, "is supported by the success of a dietary deficient in fats." They have tried it in eleven cases suspending all other treatment during the trial. In four refractory cases it was a complete success. In five cases there was considerable improvement. Two cases are still under treatment, but are showing improvement.

FUNGUS DISEASES

Further experience with 217 cases has convinced van Dyck, Kingsbury, Throne, and Myers³⁶ that trichophytin is of value in differentiating mycotic-like eruptions, provided that it is given regularly and in a concentrate adequate to producing a local reaction. Under such conditions about 30 per cent of cures is obtained. The average number of injections was twelve, given intradermally. They begin with a dose of from 0.1 to 0.2 cc of trichophytin in 1:10 or 1:50 dilution and repeat the injection every four or five days. When the beginning dilution fails to produce a positive reaction within forty-eight hours they increase the strength to 1:10, 1:5, 1:2, 1:1. Rarely do they find it necessary to use the full strength trichophytin. They warn that turbid solutions should never be used under any circumstances as they are bacterially contaminated or contain alcohol used to sterilize the needles.

One of the great problems in the treatment of a fungus disease of the feet has been the sterilization of the shoes. Henderson³⁷ now puts forward a proposition which he says not only sterilizes the shoes but even acts upon the diseased skin. "If," he writes, "a shoe is left for from eight to sixty hours in a closed tin box containing a small dish of formaldehyde the vapor will sterilize the shoe even at room temperature." But apparently it will do even more. Leather, it is said, will absorb a considerable amount of formaldehyde which it will give off again for many hours. So when a shoe, treated with formaldehyde during the night, is worn the next day the formaldehyde vapor given off distinctly influences the skin condition for the better or even, after a time, cures. Furthermore, it protects the feet against reinfection.

For a time thallium acetate enjoyed a certain popularity in the treatment of ringworm of the scalp. The toxicity of the drug was found, however, to be so great that the majority of physicians abandoned its use. Mitchell³⁸, though, retains his enthusiasm after an experience extending over five years. During this period, he reports, he has treated 200 patients varying in age from six months to twelve years. He always examines the urine first as any pathological condition of the kidneys is a positive contraindication of the administration of thallium. Then the child is weighed naked and

the dose calculated on the basis of 85 to 9 milligrams for each kilogram of body weight. A simpler procedure is to multiply the weight pounds by four which gives the dose in milligrams. His final conclusion is that if proper precautions are taken there is no reason why thallium should not be used, especially if the child is under four. If the patient is kept in bed for two days after the administration, toxic symptoms rarely develop, he finds, and if they do appear they are seldom severe and pass off quickly. Thallium should be limited so far as possible, to children under four, and a second and third dose should be given only after a considerable interval.

Finnerud is entirely convinced that the causative factor in *perleche* is a yeast organism, usually a monilia. Goodman²⁹ now takes issue with Finnerud's conclusions. He bases his arguments on the study of two cases, one of chronic *perleche* associated with *erosio interdigitalis blastomycetica* in an adult, and the second an acute case in a child. His conclusion is that the specific organism has not yet been determined. He suggests that the organisms usually found, the staphylococcus, the streptococcus, fungi, and yeasts, are but secondary invaders.

MISCELLANEOUS

*Pink Disease*⁴⁰ is variously known as Swift's disease, erythema arthriticum epidermicum, Haverhill fever, etc., and is more often seen by the pediatrician than by the dermatologist. Braithwaite⁴⁰ gives the cardinal symptoms as erythredema (red swelling), a polymorphic rash followed by desquamation, marked anorexia, muscular hypotonia, mental depression, photophobia, and sweating. The disease occurs in children following or during an acute infection. Its cause according to Braithwaite, is due to an abnormal reaction to daylight. It occurs chiefly among the well-to-do. It is more frequent during the warmer months although it may occur during the winter. Increased blood calcium, erythrocytosis and leucocytosis are common, and an increase in hemoglobin is not infrequent. The cure is to keep the child protected from the daylight.

Every dermatologist has, at one time or another, to use a disinfectant locally. There is, therefore, interest for him in Simmons⁴¹ comparative study of the bactericidal action of iodine and mercurochrome. Simmons treated skin abrasions, superficial incisions, and deep incisions, contaminated with undiluted broth cultures of either *Staphylococcus aureus* or *Streptococcus pyogenes* for various periods of time, with solutions of iodine and mercurochrome, respectively.

Tincture of iodine to 151 wounds contaminated with *Staphylococci* gave sterile cultures as follows: abrasions, 83.4 per cent, superficial incisions, 83.1 per cent, deep incisions, 31.2 per

cent. With wounds contaminated with *Streptococci* it gave sterile cultures as follows: abrasions 75 per cent, superficial incisions, 80.9 per cent, deep incisions 82 per cent. Of the 210 contaminated wounds treated with tincture of iodine, the cultures from 156, or 74.2 per cent, were sterile. Mercurochrome used under similar conditions caused very little reduction in the numbers of the viable test organisms and failed to sterilize any of the 210 contaminated wounds.

Infantile Eczema is often considered by the profession at large as merely a skin disease to be dismissed with a trade formula and the remark that he will outgrow it as he gets older. Koch and Schwartz⁴² however, consider the matter more serious. They report that among 103 patients studied there was a mortality rate of 14.5 per cent and a morbidity rate of 43.6 per cent. Of 56 children admitted to the hospital for eczema alone 17.9 per cent died and 33, or 58.9 per cent had complications. They advise that infants having infantile eczema should not be sent to the hospital, but should be cared for either in the home or in a foster home under medical supervision, or the Speedwell technique of Chapin.

Since the writing of the last Report, the emphasis in regard to *Scleroderma* seems to have changed. In the months preceding that report the interest in scleroderma centered in its response to sympathectomy and the other remedial measures instituted for the relief of a vasomotor disturbance. Judging by the paucity of papers on that subject in the months immediately preceding this Report, that interest seems to have faded. Investigators now seem to have turned to other fields of exploration. From among the later reports we have chosen two for notice, because they depart from routine thought and present new viewpoints.

The first has to do with Selve's work with the parathyroid hormone⁴³. Experimenting with nursing rats, 7 to 14 days old, he succeeded, after daily intraperitoneal injections of 5 to 10 units of parathyroid hormones (Gollip) for three or four successive days, in producing changes identical with scleroderma in 20 per cent of the animals.

A stage corresponding to the edematous stage of this disease developed after a second dose and an atrophic stage after fifteen days. From these results he draws the conclusion that scleroderma, and osteitis fibrosa cystica, and Albers-Schoenberg marble disease of bone are all due to an excess of the parathyroid hormone.

The second article to which we call attention is on the treatment of scleroderma by iodine gas. Breitmann⁴⁴ treated three cases by exposing the affected areas, the hands and forearms, to gas formed by heating iodine crystals, applying the treatment at intervals of from three to five days for a period of from one to three months. All three cases were benefited greatly. Breitmann says that the iodine gas treatment also

worked well in such widely different affections as vitiligo, weeping eczema, and furunculosis.

Diabetes, with its disturbance of the sugar metabolism, notoriously favors *pyogenic infections*. Tauber⁴⁵ studied the blood sugar index in over fifteen hundred cases of various kinds of skin disease of which 250 were cases of furunculosis, pyoderma, and ecthyma. One hundred and eighty-nine of the cases of furunculosis did not have a high blood sugar content. From this fact Tauber reasoned that perhaps the susceptibility to pyogenic infection was because the organism did not receive enough carbohydrate and sugar in the diet. Putting this supposition to the test, he gave his patients a daily intravenous injection of 500 cc of 5 per cent dextrose for five successive doses together with liver and a diet rich in carbohydrates. The results were striking. The pain diminished and the infectious process ceased to spread after the second dose, that is, on the second day. Only four cases developed a second furuncle and only one, a third. Tauber is convinced, therefore, that an increased carbohydrate intake is a definite factor in the production of antibodies necessary to resist invasion by pyogenic organisms.

Blood transfusion in dermatologic therapy is not at all unknown, but has rarely been carried out on the same scale as that reported by Scherber⁴⁶. His report is really a summary and an evaluation. In impetigo herpetiformis he found blood transfusion a life saver. In pemphigus vulgaris, it was a valuable adjuvant. Twice it failed in pemphigus vulgaris. In dermatitis multiformis there was merely a temporary improvement, as was the case in pemphigus acutus malignus. In aphthous stomatitis he secured a remission which however was followed by a relapse. He recommends the measure in acute and chronic purpura, but particularly in purpura hemorrhagica. Severe cases of erythema multiforme he finds favorably affected by a combination treatment of blood transfusion and arsenic therapy. In the treatment of arsenphenamine dermatitis and of a gold dermatitis the results are exceptionally favorable. He also recommends blood transfusion in septic erysipelas, in sepsis following furunculosis, in sepsis from gangrene of the mouth, and in gonococcal sepsis.

Prokoptschuk and Baronowsky⁴⁷ report two cases of impetigo herpetiformis. One in a pregnant woman not treated by transfusion was fatal. A second case was in a non-pregnant woman who, under blood transfusion, recovered. In this second case the eruption was extremely painful, spread eccentrically, and was accompanied by a typhoid-like condition and high temperature. The eruption continued to spread. The woman grew weaker and weaker. Finally a transfusion was given of 370 cc of blood. By the third day the temperature had dropped considerably and by the fourth was normal. In several weeks the woman was completely cured.

They think that neither pregnancy nor changes in the generative organs are responsible for impetigo herpetiformis. They believe, rather, that the cause is sepsis. Their reason for this belief comes from the postmortem findings in the first case, particularly upon the changes found in the spleen which were typically those of sepsis.

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MILBANK MEMORIAL FUND

40 Wall Street, New York

John A. Kingsbury, Secretary

Wage-earning families who suffered serious loss of income on account of the depression had 39 per cent more babies in the period of 1929-1932 than their neighbors whose incomes were not reduced following 1929. At the same time there was 50 per cent more illness in families whose incomes dropped most sharply than in families who were not seriously affected by the depression.

These findings in a house-to-house canvass of 8,000 families in eight typical cities, just completed by the Milbank Memorial Fund in cooperation with the United States Public Health Service, will be reported in the forthcoming issue of the *Milbank Memorial Fund Quarterly*, by Edgar Svidenstricker, in charge of the foundation's division of public health activities, and G. St. J. Perrott, consultant to the United States Public Health Service. The authors say that so far as they know, the house-to-house investigation regarding occupation, employment, income, births, and ill health in each of the 8,000 families which they directed is the first of its kind ever undertaken.

The study was limited to white families with wage-earners in the skilled, unskilled, or white collar classes, residing in the poorer districts, exclusive of slums in New York (Manhattan), Brooklyn, Syracuse, Baltimore, Birmingham, Pittsburgh, Detroit, and Cleveland. The average income of these families was \$1,700 in 1929; it dropped to \$900 in 1932.

The investigation revealed that families without any employed workers in 1932 had a birth rate during the depression 48 per cent higher than those which had one or more full-time workers in 1932. A special study in four cities showed that the families living on relief funds had a birth rate 53 per cent higher than those not on relief but with incomes of less than \$1,200 a year.

The average annual birth rate during 1929-1932

per thousand married women aged 15-44 years in the whole number of families studied was 152, as compared with 126 for the nation as a whole. For the families included in this investigation the birth rate was 39 per cent higher where the income dropped than where it did not change. The birth rate for families with incomes averaging below \$1,200 was one and one-half times that of those averaging above \$2,500 but still in the wage-earning class. The highest birth rate, 178 per thousand, states the report, was in families classed as poor in 1929 as well as in 1932. However, it is considered significant that families forced to shift from a higher to a lower income level were found to have a higher birth rate during the depression years than those families who were able to remain in the class from which the downward shift was made. Where the drop was from \$2,000 or more to less than \$1,200 the differential rates were 107 for those who kept their income and 133 for those who suffered a loss. For the drop from those averaging between \$1,200 and \$2,000 to a level below \$1,200 the differential rates were similarly 113 and 157.

The report further states that "the illness rate was relatively great in families without employed workers, less in families with part-time workers only and still less in families with full-time workers." However, these figures do not mean that illness was a cause of unemployment, since the questions regarding health referred only to a period of three months in the late spring of 1933. "In fact," say the authors, ill health as a cause of unemployment was relatively unimportant in comparison with lack of work. They conclude that "in so far as illness is an indication the health of persons comprising families seriously affected by the depression is being impaired."

An important scientific feature of the investigation was that the families, whose breadwinners still had their jobs served as a control group "a yardstick for measuring conditions of those who experienced economic reverses."

CASE RECORDS of the MASSACHUSETTS GENERAL HOSPITAL

ANTE MORTEM AND POST MORTEM RECORDS AS USED
IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES

EDITED BY RICHARD C. CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 20141

PRESENTATION OF CASE

First admission A twenty-four year old Hebrew teacher entered complaining of swelling of the left side of her face of a day's duration.

The patient had been in fairly good health all her life except for several rather severe colds associated with cough every winter. During the past winter these almost amounted to one continuous cold. Two or three months before entry she had noticed that her ankles were slightly swollen, but she was not particularly disturbed about this. Approximately one month before admission she began to have dull headaches every morning just after awaking. One aspirin tablet gave relief. Three weeks before admission she had another severe cold with nasal discharge and moderate epistaxis. One week before entry her throat became sore and a cough developed. The following day she became very hoarse and lost her voice. During the past week her eyes had been very puffy, especially early in the morning, and the day before admission she vomited shortly after waking. On the morning of admission she awoke with the left side of her face swollen. She visited her physician for the first time, he advised admission to the hospital. She had never noticed any red or bloody urine. For the past few days she had had some slight blurring of vision with specks before her eyes.

Her mother and father were living. Her mother had diabetes and was taking insulin. Two sisters and one brother were living and well. There was no history of heart or kidney disease in the family.

The past history was essentially negative. She had had a tonsillectomy and adenoidectomy at the age of seven and an appendectomy fifteen years before entry. At that time her urine was negative. Her blood pressure was not recorded.

Physical examination showed a well developed and moderately obese young woman lying flat in bed in no apparent distress. She was slightly stuporous. Her skin and mucous membranes were slightly pale. The tongue was smooth. The breath was definitely urinous. There was no hyperpnea. The lungs were clear. The heart was thought to be probably slightly enlarged, but the examination was difficult because of her large breasts. The blood pressure

was 180/120. There was pitting edema of the lower legs to the knees and slight swelling of the eyelids. Examination of the fundi showed blurring of the disks with edema and many hemorrhages. The vessels were moderately thick. One old healed scar was seen.

The temperature was 99°, the pulse 110. The respirations were 22.

Examination of the urine showed a specific gravity of 1.008 and a slight trace of albumin. The sediment showed 20 to 40 white blood cells, 5 to 7 red blood cells and a large number of hyaline and cellular casts. Examination of the blood showed a red cell count of 2,590,000, hemoglobin 50 per cent. The white cell count was 16,900, 80 per cent polymorphonuclears. There was moderate achromia, with slight variation in the shape of the red cells. Examination of the stools was negative. The Hinton test was negative. The non-protein nitrogen was 80 milligrams. A phenolsulphonephthalein test showed no excretion at the end of fifteen minutes and 4 per cent at the end of one hour. The carbon dioxide combining power was 30.3 volumes per cent. The serum protein was 5 per cent.

X-ray examination showed no definite variation from normal in the kidneys. The heart shadow was distinctly abnormal both in size and shape. There was enlargement both to the left and to the right of the midline. The hilus shadows were increased in density and length. All the larger lung markings were prominent. The transverse diameter of the heart measured 14 centimeters, 9 centimeters to the left and 5 to the right. The diameter of the chest measured 24 centimeters.

She was given fluids up to 100 ounces daily and put on a low salt, low protein diet. She slowly but steadily improved. On the ninth day a note was made that her carbon dioxide combining power was up to 36 and that the casts had nearly disappeared from her urine. Her edema gradually disappeared. She remained in the hospital for eleven weeks and was discharged improved. At that time her urine showed a specific gravity of 1.024 with a slight trace of albumin and with only an occasional white blood cell. Her non-protein nitrogen was down to 66 milligrams. Her serum protein was 5.8, the red blood count 2,850,000 and the hemoglobin 55 per cent. A phenolsulphonephthalein test showed only a trace of dye at the end of one hour.

History of interval Shortly after her discharge she began to have rather severe headaches, especially in the early morning, with some vomiting. The swelling of her legs increased a little for the first week or two, then the edema began to involve both the arms and face. She came to the hospital for observation three weeks before her second entry. The non-protein nitrogen at that time was 60 milligrams, the red blood cell count 2,800,000, the hemoglobin 60 per cent. Since discharge she had re-

mained on her own selected diet, but two and a half weeks before admission she was put on a low protein diet. Following this her edema subsided somewhat, but after a time gradually increased. Not long before her second entry the vision of her left eye became blurred and she was unable to read. For three nights before her reentry she was unable to sleep and had a marked distaste for food. The edema increased very rapidly.

Second admission, a month after her previous discharge

Physical examination showed a pale girl with prominent eyes. Her breath was distinctly urinous. Her face was puffy. There was marked blurring of both disks with slight swelling of the left and also a slight amount of exudate in the left macular region. The blood pressure was 200/120. There was a small area of dullness and diminished breath sounds at the right base with a few scattered râles throughout. The abdomen was moderately tender in the lower part and the edge of a slightly tender liver was felt in the epigastrium. There was moderate edema of the legs and sacrum.

Examination of her urine showed a specific gravity of 1.004, a large trace of albumin and occasional red blood cells, white blood cells and casts. Examination of the blood showed a red cell count of 2,500,000 with a hemoglobin of 50 per cent and a white cell count of 14,300, 64 per cent polymorphonuclears. Examination of the stools was negative. The non-protein nitrogen was 97 milligrams, the serum protein 6.9 per cent.

The patient went downhill steadily. Her blood pressure ranged from 250 to 270/150. She vomited several times. On one occasion there was 400 cubic centimeters of vomitus with a 2 plus guaiac. She became very drowsy. Her non-protein nitrogen rose to 200, her carbon dioxide combining power to 22.4. She went into coma, had a general convulsive seizure and died.

DIFFERENTIAL DIAGNOSIS

DR. CHESTER M. JONES. It seems to me that this is a fairly typical story of terminal renal failure and that the diagnosis should be a fairly straightforward one. Which is cart and which is horse, however, in this story is a little difficult to determine.

She has a story of edema going back many months before admission to the hospital, a generalized edema involving the face as well as the extremities, and a story also of continuous infection of the upper respiratory type going back many years.

It is said that her tonsils were taken out. I should like to know why, but I suppose it was because of repeated sore throats. That was not in the summary. We do not know whether she had any severe throat infections prior to the tonsillectomy.

The upper respiratory infections of which we have a history are not quite of the type that one expects to get with a story of glomerular nephritis.

Her urinary symptoms came on rather rapidly and certainly were the presenting picture when she first came into the hospital.

Even at the time of the first admission she was slightly stuporous. She was very pale. There was a urinous breath. At that time the lungs were clear. There was a distinct impression that the heart was enlarged although it could not be measured accurately. There was no elevation of blood pressure. It was perfectly obvious that in addition to a renal element in the picture hypertension was present. Whether that was the result of chronic nephritis or whether it was in the nature of an essential hypertension which had resulted in renal changes would seem to me to be the difficult point at issue.

Even at that time she showed blurring of the disks, although there is no mention of choking of the disks at the first admission. There were many hemorrhages with thickening of the vessels, showing very definite evidence of arteriolar sclerosis.

Her urine on admission showed a specific gravity of 1.008, which is what one would expect to find with long standing glomerular nephritis or with a vascular nephritis that has been persistent for some time. There were casts, both cellular and hyaline. There was only a moderate amount of albumin.

The most striking thing at the first admission is the red blood cell count of 2,590,000. It certainly indicates very serious renal damage of long duration. That in itself would give a very definite idea of the prognosis in her case. Anemia of that degree with a story of short duration would give a very doubtful prognosis.

The leukocytosis of 17,000 at the first admission I do not understand. There was no obvious source of infection found on admission. There was no throat infection. There was a question of recent sinus or antrum. Possibly it was not fully enough described to make it possible for me to account for the leukocytosis. I do not know how to explain it.

The elevation of non-protein nitrogen of course is very high, 80 milligrams.

It is also interesting that when she came in the carbon dioxide combining power was 30 volumes per cent, which indicates a very real mild acidosis which may occur in renal insufficiency due to failure of excretion of organic acids.

There was the lowering in proteins that may occur in chronic nephritis, which is an indication that in any case one should not limit the protein intake as is so frequently done. That her clinical course during the first admission after the protein intake was increased, I think is prob-

ably the proper thing to expect I think we have been too apt to starve our patients as to protein intake because they have nephritis and hypertension I am sure that they feel very much better and we do not influence the course of the disease by giving them a reasonable amount of protein There is no indication that it will increase the hypertension So far as the edema is concerned, it certainly would have been wise to maintain the sodium chloride intake at a moderately low level

X-rays at the first admission bore out the contention that the heart was enlarged, but there is nothing characteristic so far as the report is concerned as to the character of the heart disease The transverse diameter is obviously greater than normal In a seven-foot plate the dimensions that we have are transverse 14 centimeters with an intrathoracic diameter of 24, which shows very definite enlargement but apparently equally to the right and the left, and I think that film shows it on both sides

DR GEORGE W HOLMES I think that the x-ray bears out the clinical evidence and that your interpretation of it is correct, that the heart is definitely enlarged to both the right and the left With the history one would properly interpret that as hypertensive heart with dilatation of the auricles rather than as rheumatic heart

DR JONES Would it indicate that there had been a certain degree of heart involvement for some time, or is it acute?

DR HOLMES It had gone on long enough to produce some hypertrophy of the left ventricle

DR JONES Of course if she has had hypertension for any length of time that would fit in with the x-ray picture?

DR HOLMES Yes

DR JONES She improved with rest and with a more normal diet than she was given at first and she left the hospital clinically better but from the point of view of the laboratory with no improvement whatever Her anemia was practically the same She still had some nitrogen retention and a slight but true acidosis We do not know what the blood pressure was on discharge, but I assume that it did not drop very much

There is one interesting finding on discharge The specific gravity of the urine was 1.024 All the other gravities were low That would seem to indicate more concentrating ability than one would have assumed at first I wonder if she was getting epsom salts That will increase specific gravity quite a bit if there has been much absorption

Her second admission was really a repetition of the first There was no essential change The only additional thing was that she was having more intense headaches I should say that in this type of disease headaches are to be expected rather than not to be expected She did not

however have a true hypertensive crisis with extreme headache, from that going into a comatose condition

The second physical examination brings out a point that I think is rather important to stress a little, and that is that the examination of the fundi shows not only blurring but actual choking of the disks I mention that merely because when I was a house officer and for some years afterward we were taught that one does not get choking in this condition

The blood pressure has gone up between the first and second admissions, so that her initial pressure instead of being 180/120 is 200/120, a little higher certainly, and in addition we have evidence of heart failure because she has slight dullness at the bases, râles, and a large tender liver At present she comes in not only with evidence of renal insufficiency and hypertension but also with a certain amount of acute heart failure which fits even better into this picture of cardiac enlargement and dilatation that Dr Holmes has mentioned

The edema is present at the second admission just as at the first Otherwise I should say that the findings are very little altered The specific gravity of the urine went down to 1.004, which again indicates a great deal of renal dysfunction, and it is worth while noting that on both occasions she failed to excrete any real amount of dye after intravenous phthalein

She comes in again with a white blood cell count that is roughly 14,000 I think that this time it is associated with respiratory infection, because there was enough dullness localized at the right base to suggest that there might be pneumococcus infection as well

She went down steadily The blood pressure rose to 270/150, which I think is what one might expect, and with that her non-protein nitrogen rose to 200 milligrams and the carbon dioxide combining power to 22 volumes per cent,—very marked inability of the kidney to handle the nitrogen or any organic acids or to concentrate the urine properly

I should think that probably a young woman of this age, in spite of a long story of repeated upper respiratory infections, probably had essential hypertension, arteriosclerosis, with vascular nephritis as a result, or as part of the picture I should be less inclined to think that she has a chronic glomerular nephritis as a result of chronic streptococcus hemolyticus infection of the throat If she has that she has very marked vascular disturbance as well The condition I think is one of the characteristic conditions that one finds in essential hypertension with renal failure

DR TRAUB B MALLORY You saw this patient, Dr Smith Have you anything to add?

DR WILLIAM D SMITH I saw her during her first admission but not at the second I felt at that time that with her history of repeated respiratory infections she probably had a chronic

glomerular nephritis, and that the hypertension and the vascular changes of arteriosclerosis were secondary

CLINICAL DIAGNOSES

Chronic glomerular nephritis with edema
Hypertension
Uremia
Hypertensive retinopathy

ANATOMIC DIAGNOSES

Chronic glomerular nephritis
Ascites
Hypertrophy of the heart
Bronchopneumonia
Acute gastritis
Operative wound old, appendectomy

PATHOLOGIC DISCUSSION

DR MALLORY The autopsy here showed only moderate enlargement of the heart. It weighed 350 grams, which would be within normal limits for a large man but is definite hypertrophy for a small girl.

The kidneys weighed 120 grams, were very much shrunken, granular, with a narrow cortex, and microscopically showed a pretty typical glomerular nephritis with well marked capsular adherence and endothelial proliferation within the capillaries.

As is usual in any case of long standing glomerulonephritis with much atrophy of renal substance, there is considerable sclerosis of the renal vessels. This does not look, however, like a very active progressive process such as one would expect with a superimposed vascular nephritis, and the arterioles elsewhere in the body were free from degenerative changes.

There was a terminal bronchopneumonia, as was prophesied.

CASE 20142

PRESENTATION OF CASE

DR PAUL D WHITE This case was one of extraordinary interest to me. The patient was a man of forty-eight whom I saw last August.

Present illness He was referred to me because of severe attacks which I will describe by reading my original notes. He had always been well and very active. He had been under heavy strain for the past two years, mostly associated with the business depression. About five or six weeks before I saw him, while he was on a vacation in New Hampshire, he had an attack of old-fashioned stomach ache following a "hot dog" roast the night before. The pain started in his mid-abdomen, went up into the left chest and lasted all day. It hurt him to breathe, not markedly but somewhat. He drove his own car home nevertheless to Connecticut from the White Mountains. That night at home he saw his doctor, who said he had congestion in the left chest and fever. He spent the next day in bed and after that resumed work.

The chest pain felt like a pleurisy pain, as he called it, and lasted a week, gradually subsiding. He was then quite well again, drove up to the mountains for his wife and came back two days later feeling well. He ate a hearty supper and slept well all that night. While preparing early breakfast himself the next morning he had a catch in his throat, found it hard to breathe and became panicky. His doctor came, gave him morphia and put him to bed. There was a consultation between two local doctors. There was some uncertainty about the status of his heart, and a question of coronary thrombosis was raised at the time. He was then referred to me.

He had been given digitalis at the time of his second attack two weeks before I saw him. He took it in a dosage of fifteen drops twice a day until two days before I saw him, then eight drops a day. He had stayed in bed five days and had been up and feeling fairly well after that and back at work.

Five days before I saw him he was tired and had a little fever. Although he was quiet at work he had been active in other ways. One day he went to a bridge party and to the movies and was quite tired after that but without symptoms of chest pain. He was exhausted the next day and had a spell of palpitation which lasted twenty to thirty minutes. The heart pounded at the time, but he did not note as to whether the rate was fast or not. He had some dyspnea but no gasping.

Past history He had never been ill except for scarlet fever as a boy. His tonsils had been burned out. He had recently lost nine pounds in six weeks, but he was on some restriction of diet just before I saw him. He had for years smoked six to eight pipefuls of tobacco a day. He took no alcohol, and drank coffee moderately. He had been very active, playing tennis, mountain climbing, etc. He was in the habit of taking a strenuous annual vacation in the summer. There was one other point that he told me, that was that he sprained his leg severely nine or ten weeks earlier, four weeks before the attack of stomach ache followed by pain in the left chest in New Hampshire after the "hot dog" roast the night before.

Family history His family history is not remarkable. His mother and one brother were living and well. His father died at sixty-two of arteriosclerosis. He had two adopted children, one of whom was causing him a great deal of nervous anxiety.

Physical examination On physical examination he appeared to be in good general health. His breathing was normal. The reflexes were normal. There was no arcus senilis or thyroid gland enlargement. The teeth were in fair condition. The tonsils were small and reddened. No abnormal pulse was visible in the neck. The heart was at the outer edge of normal in size. The sounds were short but otherwise normal.

There were no murmurs. The heart rhythm was normal. There was no precordial tenderness. The pulse was normal. The artery walls were soft. The lungs were clear. The abdomen was soft. The liver and spleen were not felt. There was no dependent edema or clubbing of the fingers. Pulse rate 96. Blood pressure 165/85. He was nervous at the time.

An electrocardiogram showed sino-auricular tachycardia, rate 120. It was taken when he first came to the office and he was more nervous than later. As a rule we find tachycardia when the electrocardiogram is first taken. There was a slight tendency toward low voltage. That is not remarkable. There were rather low T waves, not strikingly abnormal.

Fluoroscopic examination by myself showed a full sized heart, just at the edge of normal. The measurements were 11.5 centimeters for the transverse diameter of the heart and 23.5 for the internal diameter of the thorax. The heart was active, showed visible pulsation. The lungs were questionably normal. The pulmonary arteries showed slight increase of prominence, but there were not many variations from the normal.

I thought then that he had no serious heart disease, a normal irritable heart, with a question of neurocirculatory asthenia, a question of paroxysmal tachycardia, a question of pulmonary embolism and a question of coronary thrombosis. I thought his prognosis would be good. Seven days later, however, his brother-in-law called me and said the patient had died suddenly that morning. My first thought then was that I certainly had missed serious coronary disease, but a bit later I found that the final illness was one of six or eight hours, consisting of collapse and a state of shock, and then I was not so sure.

Postmortem examination was asked for and at first refused, but at the time one of the doctors who was taking a graduate course with us suggested that if this were pulmonary embolism related to his leg injury in playing tennis it might be considered an accident and therefore might entitle him to more insurance. Therefore I wrote that to the patient's doctor, and the family then agreed to the postmortem examination. The body was exhumed.

CLINICAL DIAGNOSES

Possible coronary disease

Possible recent pleurisy or pulmonary embolism

ANATOMIC DIAGNOSES

Pulmonary embolism

Infarcts of the lung

Hypertrophy of the right heart, slight

PATHOLOGIC DISCUSSION

DR. TRACY B. MALLORY. Dr. Castleman went down to Connecticut to examine this exhumed body and he will tell you what he found.

DR. BENJAMIN CASTLEMAN. The body was in good condition. It was well embalmed.

On opening the chest cavity the heart did not appear very much enlarged. The right heart appeared slightly thicker than normal, measuring 6 millimeters. We did not find anything wrong with the coronary vessels. There was no infarction of the myocardium anywhere.

On examining the lungs we noticed that on the left side there were fairly definite firm areas on the periphery, and when cut into they appeared to be typical infarcts. Although the embalming fluid had caused the whole lung to be fairly firm, these infarcted areas were much firmer, and on cutting deeper we found the pulmonary vessel to this area completely thrombosed. There were two or three infarcts on the left side which were larger and also one which stands out here quite definitely on the right.

We did not have permission to examine the leg which he was said to have sprained, so we do not know whether there were any thrombi there or not. We merely examined the chest.

DR. RICHARD C. CABOT. What do you think the old-fashioned stomach ache was?

DR. WHITE. I suppose that was the point of first location of the pain associated with the pulmonary embolism, the first attack. I believe that all of his attacks were embolic, one after another, and that one finally killed him.

DR. CABOT. Are you accustomed to find pulmonary embolism pains at that point?

DR. WHITE. No, but I think we may find any pain due to disease in the chest start low down in the epigastrium and radiate upward. Such a story is not uncommon in angina pectoris. I do not see many cases of pulmonary embolism and I do not know how often such a distribution of pain may occur in such cases.

A PHYSICIAN. Might the pain have been caused by diaphragmatic pleurisy in this case?

DR. MALLORY. We had recently a case of infarction of a lower lobe of the lung causing diaphragmatic pleurisy with such intense abdominal pain that an exploratory operation was done for acute pancreatitis.

DR. WHITE. And pain in the chest?

DR. MALLORY. Not so far as I can remember.

DR. WHITE. This case was of interest to us because of a study we have been making of a group of cases in which the differential diagnosis between coronary thrombosis and pulmonary embolism has been rather difficult in severe cases of pulmonary embolism with dilatation of the right heart. This patient came along as we were studying some hospital cases. We were not fortunate enough to see him during the acute process, otherwise we might have found some of the signs and symptoms.

A PHYSICIAN. An x-ray film might have been of some assistance.

DR. WHITE. Yes, and possibly an electrocardiogram, but we have not gone far enough yet to be sure.

The New England

Journal of Medicine

SUCCESSOR TO

THE BOSTON MEDICAL AND SURGICAL JOURNAL

Established in 1828

Published by THE MASSACHUSETTS MEDICAL SOCIETY
under the jurisdiction of the

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for the United States Canada \$7.04 per year \$8.52 per year
for all foreign countries belonging to the Postal Union.Material for early publication should be received not later
than noon on Saturday. Orders for reprints must be sent to
the Journal office 8 The FenwayThe Journal does not hold itself responsible for statements
made by any contributorCommunications should be addressed to The New England
Journal of Medicine 8 The Fenway Boston Mass.

THE REPORT OF THE SPECIAL INDUSTRIAL DISEASE COMMISSION

THIS commission has operated under Chapter 43, Resolves of 1933 of the Massachusetts Legislature. The report sets forth the findings of the studies conducted by this body covering working conditions in the granite and foundry industries, the effect of their conditions on the health of workers, the means of lessening dust exposure, and the legislative and administrative aspects of the occupational disease problems.

Fifteen granite and foundry establishments were visited and studied where 2100 granite, and 6,700 foundry workers, were employed. The nature of the work in these industries is fully explained in the text of the report, and illustrations and charts convey information which augments that embodied in the text.

As a result of the work done by this commission, a series of recommendations is included in the report which sets forth preventive regulations, various amendments to present laws relating to insurance of workmen, physical examinations of the employees, compensation for dis-

ability, protective regulations, the computation of insurance premiums the creation of a Division of Occupational Hygiene in the Department of Labor and Industries a Division of Adult Hygiene in the Department of Public Health, and a Medical Board of Review, whose duties shall be to review, on request by the Industrial Accident Board, reports and findings of the Department of Public Health furnished with respect to compensation cases and findings of physical fitness made by the Department of Public Health.

This board if the recommendations are adopted, may hold hearings and render decisions.

It is provided in the recommendations that this Medical Board of Review shall be composed of a clinical pathologist, a roentgenologist and a specialist in diseases of the chest, to be paid on a per diem basis.

Drafts of fourteen special acts appear at the end of the report. These are designed to make workable the recommendations of the Special Industrial Disease Commission.

This report is of especial interest to physicians who may be called to care for the granite and foundry workers and should be studied by the Committee on State and National Legislation of the Massachusetts Medical Society, because it includes important health measures and economic problems.

Under the initiation of Dr. Robey, President of the Massachusetts Medical Society, conferences have been held with such persons and groups as have indicated interest in the report.

PRESIDENT ELIOT'S RELATIONS TO MEDICINE

NONE but a comparatively small number of physicians in active life know of the influence exerted on medical education by Charles W. Eliot, except as one may have been interested in the history of his life and his accomplishments in the graduate schools as well as the University. The recital by Dr. Walter B. Cannon in this issue*, of those years of devotion to the Harvard Medical School will be enjoyed by those who knew of the difficulties encountered when the then young president carried through his plans for an improved medical curriculum over the opposition of some of the members of the faculty.

Dr. Eliot was especially concerned in the training of doctors, and repeatedly urged larger classes for the medical school in order to supply a greater number of well-qualified physicians, thereby gradually displacing the irregulars who formerly constituted a large proportion of practitioners throughout the state.

He lived to see medical education largely reconstructed and coördinated with the sciences which play so large a part in dealing with illness.

His interest in medicine was not confined to

the medical school, for on several occasions he responded to appeals for his assistance at hearings before legislative committees when matters of public health were under consideration. On many occasions he was the leading speaker at the annual banquets of the Massachusetts Medical Society, and gave substantial and important advice to the doctors, often with pointed references to their deficiencies.

All who are interested in medical education, and especially President Eliot's relation thereto, may read the oration of Dr. Cannon with profit.

HOUSE BILL 1305

THIS bill was designed to authorize the University of Massachusetts to grant the degree of Bachelor of Science. It passed the House and Senate by a large majority. His Excellency, Governor Joseph B. Ely, vetoed the bill when it was sent to him, and his veto was sustained by roll call vote of 55 to 151 in the House. Webster's dictionary defines University as "An institution organized for teaching and study in the higher branches of learning and empowered to confer degrees in special departments", etc.

This so called University was given a charter by the Commonwealth of Massachusetts, and, by reason of the title given to the University, it has been supposed by some to be a state institution. On the title page of a recent pamphlet the following words appear: "University of Massachusetts Middlesex College of Medicine and Surgery Affiliated."

Frank L. Whipple, A.M., M.D. is recorded in this pamphlet as President of the University and Dean of the Faculty of Medicine. The major purpose of this publication seems to be to set forth the purposes and methods of the Middlesex College of Medicine and Surgery, one of which, on the inside page of the cover, appears to be to provide instruction for "poor but worthy students."

If the power to confer the degree of Bachelor of Science had been given to the University of Massachusetts it would have been construed as an indorsement by the State of Massachusetts, and would have been of advantage to the Medical School.

Governor Ely does not seem to feel that the University of Massachusetts is entitled to an extension of its powers.

THIS WEEK'S ISSUE

DAMESHEK, WILLIAM M.D. Harvard University Medical School 1923. Associate Physician, Beth Israel Hospital. Physician, Boston Dispensary. Physician to the Blood Clinics of the Beth Israel Hospital and Boston Dispensary. Physician, Research Division, Boston State Hos-

pital. Instructor in Medicine, Tufts College Medical School. Address 371 Commonwealth Avenue, Boston, Massachusetts. Associated with him is

BERLIN, DAVID D. M.D. Tufts College Medical School 1923. F.A.C.S. Surgeon to Thyroid Clinic, Beth Israel Hospital. Assistant to Visiting Surgeons, Boston City Hospital. Assistant Professor of Anatomy, Tufts College Medical School. Address 68 Bay State Road, Boston, Massachusetts. And

BLUMGART, HERRMAN L. B.S., M.D. Harvard University Medical School 1921. Visiting Physician, Beth Israel Hospital. Associate Professor of Medicine, Harvard University Medical School. Director of Medical Research, Beth Israel Hospital. Address 330 Brookline Avenue, Boston, Massachusetts. Their subject is "Complete Ablation of the Thyroid Gland in a Case of Chronic Lymphatic Leukemia with Hypermetabolism." Page 723.

CANNON, WALTER B. A.M., S.D., LL.D., M.D. Harvard University Medical School 1900. George Higginson Professor of Physiology, Harvard University Medical School. His subject is "President Eliot's Relations to Medicine." Page 730. Address Harvard University Medical School, Boston, Massachusetts.

WARREN, SHIELDS A.B., M.D. Harvard University Medical School 1923. Pathologist, New England Deaconess, Huntington Memorial, Pondville State, New England Baptist and Robert B. Brigham Hospitals. Consulting Pathologist, House of the Good Samaritan. Director, State Tumor Diagnosis Service. Instructor in Pathology, Harvard Medical School. Address 195 Pilgrim Road, Boston, Massachusetts. Associated with him is

CANAVAN, MYRTLE M. M.D. Woman's Medical College of Pennsylvania 1905. Formerly Pathologist, Department of Mental Diseases. Curator, Warren Anatomical Museum, Harvard University Medical School. Address 25 Shattuck Street, Boston, Massachusetts. Their subject is "Frequency of Cancer in the Insane." Page 739.

EVANS, WILLIAM A. JR. A.B., M.D. Johns Hopkins University School of Medicine 1930. House Officer, Peter Bent Brigham Hospital. Voluntary Assistant, Medical Clinic, University of Wurzburg. Research Fellow in Medicine, Harvard University Medical School. His subject is "The Common Nature of Peptic Ulcer and Colitis." Page 743. Address 460 Vanderbilt Hall, Harvard Medical School, Boston, Massachusetts.

KAHN, EUGEN M.D. Universität München Medizinische Fakultät, Munich, Bavaria 1911. Professor of Psychiatry, Yale University School

of Medicine Address 333 Cedar Street, New Haven Connecticut Associated with him is

COHEN, LOUIS H. Ph.D. M.D. Yale University School of Medicine 1931 National Research Council Fellow in Medicine. Yale University School of Medicine Formerly Assistant, Department of Psychiatry, Yale University School of Medicine Address Yale University School of Medicine New Haven Connecticut Their subject is "Organic Drivenness A Brain-Stem Syndrome and an Experience" Page 748

TOWLE HARVEY P. A.B. M.D. Harvard University Medical School 1892 Consultant in Dermatology Massachusetts General Hospital Address 453 Marlborough Street Boston Massachusetts Associated with him is

GRUND, JACOB L. M.D. Harvard University Medical School 1921 Assistant Dermatologist Department of Dermatology and Syphilology Massachusetts Memorial Hospitals Instructor in Dermatology and Syphilology Boston University Medical School Address 483 Beacon Street Boston Massachusetts Their subject is "Progress in Dermatology" Page 756

MISCELLANY

MAKE MOTHER'S DAY MEAN A BETTER CHANCE FOR MOTHERS EVERYWHERE

An important step forward in the effort to save mothers lives will be taken in 1934 Mother's Day—May 13—is to be observed throughout the country by local groups determined to know precisely what their own maternity facilities are how they can be improved how to improve them

Wherever surveys have been conducted the same conclusion has been drawn—that two-thirds of the women who die die needlessly In various places there may be fractional differences in this percent age, but they are of slight significance

Merely deploring this condition will not change it. Wishing will not change it. An effort every where is needed by parents physicians and nurses *first*, to know precisely the facilities of their own communities and *secondly* to make these facilities measure up to the standards of adequate care Clubs and civic organizations can provide the machinery for coordinating such an effort.

Forms for making local surveys to appraise what exists and suggest improvements are available on application to the Maternity Center Association. Every local club or group sending in a form will receive free a copy of the Maternity Handbook by Anne A. Stevens The three clubs sending in the best appraisals will be sent a complete maternity display equipment, which may be used to teach maternity hygiene to mothers The display includes mother's clothes baby's clothes, toilet trays—everything that is needed.

The contest closes May 1 Awards will be made in time for announcement on Mother's Day

Valuable knowledge has been obtained by studies of maternal facilities in several places in the United States One of the most interesting of these was conducted by the Children's Bureau.

In fifteen states, the Children's Bureau investigated a total of 7,380 deaths from causes connected with maternity Interviews with attendants were conducted by physicians on the staffs of the State Boards of Health or the Children's Bureau In each state the study was made at the request of the State Medical Society The attending physician or midwife was visited as soon as possible after the death and in hospital cases the hospital was visited Among the facts found were these

Nine per cent of the women had received no medical supervision at all or only when dying

Only 54 per cent had any prenatal care whatever, 24 per cent received poor care and only 13 per cent had good care beginning not later than the fifth month

More than half the women had some operative procedure of these 43 per cent were women whom the doctor had not seen before labor or before the acute emergency In 11 per cent of the cases there had been a cesarean section

The rate was higher for urban than for rural sections being 75 per thousand live births and 55 respectively

A study of your own community will disclose facts more specific than these and indicate definitely just what is needed among your own people to help save mothers lives

APPOINTMENTS IN THE FACULTY OF BOSTON UNIVERSITY MEDICAL SCHOOL

Dr Winfred Overholser Assistant Commissioner of Mental Diseases in Massachusetts and president of the Massachusetts Psychiatric Society has been appointed to the position of Professor of Psychiatry in the Medical School of Boston University

Dr Louis G. Howard has been advanced to the position of Professor of Orthopaedic and Fracture Surgery and Dr Rudolph Jacoby to Professor of Dermatology and Syphilology

Dr Otto J. Hermann, Boston, has been appointed Associate Professor of Orthopaedic and Fracture Surgery

The list of assistants includes Dr Phillips Boyd Boston in Surgery Dr Bert B. Hershenson Brookline Gynaecology Dr Anna M. Allen Boston Neuropathology Dr Jose P. Bill, Wayland Public Health Dr Ralph M. Chambers, Taunton Clinical Psychiatry Dr I. William Freeman Worcester Pathology and Dr Joseph M. Hussey Wollaston, Pathology

Dr Charles Bradford of Boston has been appointed Fellow in Surgery

the medical school, for on several occasions he responded to appeals for his assistance at hearings before legislative committees when matters of public health were under consideration. On many occasions he was the leading speaker at the annual banquets of the Massachusetts Medical Society, and gave substantial and important advice to the doctors, often with pointed references to their deficiencies.

All who are interested in medical education, and especially President Eliot's relation thereto, may read the oration of Dr. Cannon with profit.

HOUSE BILL 1305

THIS bill was designed to authorize the University of Massachusetts to grant the degree of Bachelor of Science. It passed the House and Senate by a large majority. His Excellency, Governor Joseph B. Ely, vetoed the bill when it was sent to him, and his veto was sustained by roll call vote of 55 to 151 in the House. Webster's dictionary defines University as "An institution organized for teaching and study in the higher branches of learning and empowered to confer degrees in special departments", etc.

This so-called University was given a charter by the Commonwealth of Massachusetts, and, by reason of the title given to the University, it has been supposed by some to be a state institution. On the title page of a recent pamphlet the following words appear: "University of Massachusetts Middlesex College of Medicine and Surgery Affiliated."

Frank L. Whipple, A.M., M.D., is recorded in this pamphlet as President of the University and Dean of the Faculty of Medicine. The major purpose of this publication seems to be to set forth the purposes and methods of the Middlesex College of Medicine and Surgery, one of which, on the inside page of the cover, appears to be to provide instruction for "poor but worthy students."

If the power to confer the degree of Bachelor of Science had been given to the University of Massachusetts it would have been construed as an indorsement by the State of Massachusetts, and would have been of advantage to the Medical School.

Governor Ely does not seem to feel that the University of Massachusetts is entitled to an extension of its powers.

THIS WEEK'S ISSUE

DAMESHEK, WILLIAM M.D. Harvard University Medical School 1923. Associate Physician, Beth Israel Hospital. Physician, Boston Dispensary. Physician to the Blood Clinics of the Beth Israel Hospital and Boston Dispensary. Physician, Research Division, Boston State Hos-

pital. Instructor in Medicine, Tufts College Medical School. Address 371 Commonwealth Avenue, Boston, Massachusetts. Associated with him is

BERLIN, DAVID D. M.D. Tufts College Medical School 1923. F.A.C.S. Surgeon to Thyroid Clinic, Beth Israel Hospital. Assistant to Visiting Surgeons, Boston City Hospital. Assistant Professor of Anatomy, Tufts College Medical School. Address 68 Bay State Road, Boston, Massachusetts. And

BLUMGART, HERRMAN L. B.S., M.D. Harvard University Medical School 1921. Visiting Physician, Beth Israel Hospital. Associate Professor of Medicine, Harvard University Medical School. Director of Medical Research, Beth Israel Hospital. Address 330 Brookline Avenue, Boston, Massachusetts. Their subject is "Complete Ablation of the Thyroid Gland in a Case of Chronic Lymphatic Leukemia with Hypermetabolism." Page 723.

CANNON, WALTER B. A.M., S.D., LL.D., M.D. Harvard University Medical School 1900. George Higginson Professor of Physiology, Harvard University Medical School. His subject is "President Eliot's Relations to Medicine." Page 730. Address Harvard University Medical School, Boston, Massachusetts.

WARREN, SHIELDS A.B., M.D. Harvard University Medical School 1923. Pathologist, New England Deaconess, Huntington Memorial, Pondville State, New England Baptist and Robert B. Brigham Hospitals. Consulting Pathologist, House of the Good Samaritan. Director, State Tumor Diagnosis Service. Instructor in Pathology, Harvard Medical School. Address 195 Pilgrim Road, Boston, Massachusetts. Associated with him is

CANAVAN, MYRTLE M. M.D. Woman's Medical College of Pennsylvania 1905. Formerly Pathologist, Department of Mental Diseases. Curator, Warren Anatomical Museum, Harvard University Medical School. Address 25 Shattuck Street, Boston, Massachusetts. Their subject is "Frequency of Cancer in the Insane." Page 739.

EVANS, WILLIAM A. JR. A.B., M.D. Johns Hopkins University School of Medicine 1930. House Officer, Peter Bent Brigham Hospital. Voluntary Assistant Medical Clinic, University of Wurzburg. Research Fellow in Medicine, Harvard University Medical School. His subject is "The Common Nature of Peptic Ulcer and Colitis." Page 743. Address 460 Vanderbilt Hall, Harvard Medical School, Boston, Massachusetts.

KAHN, EUGEN M.D. Universität München Medizinische Fakultät, Munich, Bavaria 1911. Professor of Psychiatry, Yale University School

RECENT DEATHS

MAHONEY—STEPHEN ANDREW MAHONEY, SR. M.D., of 628 Dwight Street, Holyoke, Massachusetts, with an office at 630 Dwight Street, died at his home, March 30, 1934 of a heart attack.

He was born in North Brookfield in 1863 the son of Jeremiah and Mary A. (Healey) Mahoney. His premedical education was acquired in the public schools of Gloucester and Holy Cross College where he was given the degree of Bachelor of Arts. His medical degree was conferred by the Harvard Medical School in 1889. After an internship at the Boston City Hospital he began practice in Holyoke and in 1892 he was appointed city physician and a member of the board of health survey until 1894.

After a few years of general practice he devoted his major interest to surgery, and in later years restricted his work to this specialty.

Dr. Mahoney was surgeon on the staffs of the Holyoke City and the Providence Hospitals.

He joined the Massachusetts Medical Society in 1888, was a member of the Council for many years, and was a Fellow of the American Medical Association. He was a member of the New England Surgical Society. His interest in civic organizations was marked by devotion to the affairs of Holyoke as shown by the positions of bank president and president of a municipally owned railroad.

He is survived by his widow, Mrs. Caroline L. (Munn) Mahoney, two sons, Stephen A. Mahoney Jr., who was associated with his father, Dr. Edwin M. Mahoney, now associated with the staff of Bellevue Hospital New York City, one daughter, Mrs. Charles R. O'Neill of Holyoke and a sister, Katherine A. Mahoney, principal of the Kirtland School.

MAHONEY—EDWARD JOSEPH MAHONEY, M.D. of 73 Chestnut Street, Springfield Massachusetts died in that city, March 26, 1934, after a long illness following a sunstroke six years ago suffered while playing golf in Nassau Bahamas.

He was born in Holyoke on January 22 1869 the son of William and Catherine (Kelley) Mahoney. He was educated in the schools of his native city, graduating from the High School. In 1892 he received his A.B. degree from Holy Cross College, his M.A. degree from Georgetown in 1893 and his M.D. degree from Georgetown University School of Medicine in 1895. His record in the several educational institutions was exceptionally high, and was recognized by Holy Cross by the award of the Flatley Gold Medal for his work in rational philosophy.

After leaving Georgetown he spent two years in the study of medicine in Europe and returned to Holyoke to practice medicine in 1897. He moved to Springfield in 1910 and was given the position of head of the reorganized staff at Mercy Hospital. Dr. Mahoney was appointed Medical Examiner in April 1914 for the Springfield district, but resigned this office after about five years because of the de-

mands of a large practice. He joined the Massachusetts Medical Society and was a member of the American College of Surgeons, the New England Surgical Society, and the Springfield Academy of Medicine. He was a Fellow of the American Medical Association until he gave up active practice. He was a member of social and civic organizations.

He is survived by a brother, Patrick Mahoney, and several nieces and nephews.

HILL — ERNEST L. HILL, M.D. of Framingham, died on April 1 at his home at the age of 56. Born in Athol he attended the schools of that town and Concord New Hampshire. He was graduated from Dartmouth College and from Dartmouth Medical School in 1902.

After a service at the Boston City Hospital he practiced in Millis for sixteen years removing to Framingham fifteen years ago.

Dr. Hill was a member of the Alpha lodge of Masons and the Framingham lodge of Elks. He is survived by his widow, his mother, a son and a daughter.

NOTICES

TO ALL PERSONS INTERESTED IN THE PAYMENT OF VOUCHERS FOR MEDICAL SERVICES RENDERED TO INJURED CIVIL WORKS ADMINISTRATION EMPLOYEES

A certain amount of delay in the settlement of vouchers for medical services rendered injured employees of the Civil Works Administration is unavoidable. Legislation extending compensation benefits to these employees was not approved until February 15 1934, and the Commission has had to engage personnel and set up its organization to handle the large volume of additional work which is involved in the settlement of claims arising out of Civil Works employment.

Before approving vouchers for medical services it is necessary for the Commission to have received from the local Civil Works Administrators complete reports relating to the injury of the employee concerned. Since the entire work program was organized very quickly, some localities were slow in setting up the necessary local administration to take care of injury reports and due to unfamiliarity of the personnel with the requirements and procedure many reports of injury have been incorrectly filed, necessitating correspondence to obtain the information which was lacking.

In view of the problem presented, the Commission bespeaks the patience of physicians and others who have bills for medical services pending. Every possible effort is being made by the Commission to speed up the work of examining and certifying these claims for payment, and it is believed that within a short time considerable progress will be made in further expediting these payments.

U S EMPLOYEES COMPENSATION COMMISSION

AN ADDRESS BY DR. PHANEUF

Dr Louis E Phaneuf addressed the Buffalo Academy of Medicine, March 21, on The Management of Uterine Prolapse

DR. F M SHOCKLEY GOES TO STAMFORD HALL

Dr Francis M Shockley, of New York City and Orange, New Jersey, has been appointed Senior Assistant Physician at Stamford Hall Sanitarium, Stamford, Connecticut.

THE APPOINTMENT OF DR. GUY C RANDALL

Dr Guy C Randall has been appointed to the position of assistant superintendent of the Northampton State Hospital

He has been serving on the staff of the Danvers State Hospital

MORTALITY RATES

Telegraphic returns from 86 cities, with a total population of thirtyseven millions for the week ending March 17, indicate a mortality rate of 12.6 as against a rate of 12.1 for the corresponding week of last year. The highest rate (21.6) appears for Washington, D.C., and the lowest (6.5) for New Bedford, Mass. The highest infant mortality rate (19.3) appears for Duluth, Minn., and the lowest for Evansville, Ind., Fall River, Mass., Fort Wayne, Ind., Grand Rapids, Mich., Long Beach, Calif., Lowell, Mass., Miami, Fla., and South Bend, Ind., which reported no infant mortality.

The annual rate for 86 cities is 12.7 for the eleven weeks of 1934, as against a rate of 12.4 for the corresponding period of the previous year.

The rate in January was well below that of January, 1933. The higher average is due to the deaths in February and March, 1934. Deaths from automobile accidents are, thus far, much higher than was the case last year—*Bulletin of Department of Commerce*

FEDERATION OF AMERICAN SOCIETIES
FOR EXPERIMENTAL BIOLOGY

The Boston University School of Medicine was represented at the Federation of American Societies for Experimental Biology, recently held in New York City, by Dr Walter L Mendenhall, Dr Frederick F Yonkman, Dr Allan Winter Rowe, Dr David L Belding, Dr Frederick H. Pratt, Dr Carolyn Suden and Miss Marlon A. Reid

MASSACHUSETTS LEGISLATIVE
NOTES

PAROCHIALISM AGAIN

At the hearing before the Legislative Committee on Public Health on House Bill 755, Section 2, intro-

duced by Mr Dever of Cambridge, on petition of C Ruggles Smith, Registrar of the Middlesex College of Medicine and Surgery, there was attacked a provision of the Massachusetts statute (Section 2A, Chapter 112, General Laws) which has generally been regarded as a distinct advance in medical legislation in recent years. This Section permits the Board to accept (at its discretion) the examination of the National Board of Medical Examiners in lieu of its own examination. The same persons who opposed the giving of the discretionary power of approval of medical schools to the Massachusetts Board (House Bill 118) on the ground that "they knew so little about medical education", being by statute physicians who were not connected with a medical school, looked with disfavor on Section 2A, because the Examiners of the National Board are connected with medical schools. As the examinations of the National Board are accepted in over forty states, this recrudescence of narrow partisanship and parochialism is especially to be deplored as it may so easily become vicious.

An extended account of the hearing will appear in a later issue of the *Journal*

CORRESPONDENCE

SMALLPOX AND SUPPRESSION OF FACTS

March 30, 1934.

Editor, *New England Journal of Medicine*,

The following is from The Propaganda Menace by Frederick E Lumley, The Century Company, New York, 1933. The author quotes from E L Clarke, *The Art of Straight Living*, 1929. The quotation is as follows:

"SMALL-POX, THE PRESS AND THE ADVERTISING
MERCHANT"

"Early in the summer of 1924 a case of black small pox of a particularly virulent form was discovered in a large city of the North West. A news paper reporter at once interviewed the municipal health commissioner. The latter declared that the matter should be given wide publicity with a warning that only prompt vaccination of the thousands of unprotected persons could avert an epidemic. The reporter wrote an appropriate story on the subject. It was referred to the advertising department of his paper, which, in turn, submitted it to a group of retail merchants. At once three of the heaviest advertisers in the paper threatened to withdraw their advertising if the story were published. They felt it might hurt business."

"The story was not published, either by that paper or by any of its competitors. Business was protected, temporarily, but the epidemic came, and before a year had passed there were fourteen hundred cases and three hundred and fifty deaths from small-pox in that city!" Respectfully yours,

WM PEARCE COVES, M.D

cussion, elaborating the subject of the symposium Dr Frank Ober reviewed the afternoon's work

Dr Phemister presented his paper in the evening. This dealt primarily with a demonstration of the radiographic changes observed over a period of time following fractures of the neck of the femur. Dr Phemister's interpretations of the change in radiographic appearance were controlled in each case by photographic and histological examination of the diseased bone, where removed by operation.

Dr Phemister thought that a knowledge of the normal blood supply to the head and neck was the first prerequisite to understanding the mechanism of these changes. The anterior and posterior cervical vessels are said to supply the neck and possibly the head. There is some disagreement about the function of the vessels of the round ligament. It is thought that the inferior cervical artery supplies the medial side of the head and the superior cervical the lateral side of the head. Nussbaum disagrees that these vessels ever perforate the epiphyseal line but Dr Phemister thought that they probably did after fusion of the head and neck. The speaker showed slides of injected specimens to demonstrate this point. The capsule is also important in primary and collateral circulation. He stated that interference with the blood supply resulted in an aseptic necrosis of the bone and later proceeded to show the x-ray evidence of this process, as well as other pathological changes which follow.

There are four possible results in the femoral head from fracture of the neck of the femur: (1) a live head with union of the fracture, (2) a live head with non union of the fracture, (3) a dead head with union of the fracture, (4) a dead head with non union of the fracture. In Dr Phemister's experience he had treated 17 such fractures. Of these 14 resulted in dead heads and only three in live heads. His work was based on a study both from the standpoint of x-ray and the pathological specimens of 49 fractures. Of these cases the results were 17 live heads, 8 with union and 9 with non union, 32 dead heads, 4 with union and 28 with non union.

The pathological changes occurring at the site of fracture consist of necrosis of the cells of the fracture margins as a result of the friction of the non fixed fragments. After erosion, bony union occurs by a creeping replacement of dead bone along the fracture margins by fibroblastic osteogenic tissue. In time the callus completes the union of the fracture.

Where all tissues remain alive the x-ray shows a regional atrophy with no variation between the appearance of the head and that of the pelvis. The cartilage if undamaged remains intact and the joint space unchanged. Where union is complete the functional result of the hip is good. Dr Phemister thought that the most important point in securing union was in firm fixation of the fragments. Thus impacted fractures do well and are not observed to go through the process of necrosis and creeping replacement observed in other fractures.

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Dr Phemister showed a few results of other types of less common fractures. In a fracture of the base of the head died because the blood supply by way of the round ligament was thought to be insufficient. In a fracture of the greater trochanter there was death of the part of the head thought to be supplied by the posterior cervical artery. A dislocation of the hip without fracture was followed in one and a half years by creeping necrosis of the head probably because the round ligament had been torn and collateral circulation was insufficient to support the head.

In all of his work Dr Phemister thought that it was evident that the preservation, or loss of blood supply was the major factor in changes in the head of the femur. Yet in children there sometimes occurs aseptic necrosis without history of trauma. Then too, the condition known as Legg-Perthes' disease was difficult to understand.

Discussion was opened by Dr Brackett who suggested that longer immobilization of such fractures was a desirable procedure in treatment. Dr Cotton remarked that dead heads with union deserved protection but that dead heads without union had best be removed and the hip fixed. Dr Wilson mentioned that such pathological processes as Dr Phemister had shown also occurred in other regions which were not weight bearing, such as fracture dislocations of the shoulder and following arthroplasty where the bone is stripped. Dr Smith-Petersen agreed that blood supply is the first con-

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REPORTS AND NOTICES
OF MEETINGS

NEW ENGLAND HEART ASSOCIATION

A meeting of the New England Heart Association was held in the amphitheatre of the Children's Hospital on February 26. Drs. Paul Emerson and Hyman Green presided.

Dr. Green first presented for diagnosis three cases of congenital heart disease as they appeared during life and then to point out the great difficulty often encountered in making a correct diagnosis in these instances in children and infants, gave the findings after death. The first patient at autopsy showed the following anomalies: absent interatrial septum, defective auricular septum, a foramen ovale four millimeters in diameter, an absent superior vena cava atresia of the pulmonary artery, an absent spleen and situs inversus of the remaining abdominal viscera. The second case at post mortem showed an idiopathic hypertrophy, with a small patent foramen ovale. The third patient had a small patent foramen ovale, a patent ductus arteriosus, and a coarctation of the aorta of the infantile type.

Drs. Green and Emerson next proceeded with a classification of the 74 cases of congenital heart disease seen in the wards of the Children's Hospital in the last five years. All but six cases had either (1) septal defects one or more in various combinations (open foramen ovale, a defect in the interventricular septum or a patent ductus arteriosus) or (2) septal defects one or more with other cardiac defects. The six cases without septal defects were coarctation, one idiopathic hypertrophy, two pulmonary stenosis, one auriculoventricular defects, two. Tabulated the cases have been as follows: one septal defect, five cases, two septal defects, seven cases, three septal defects, seven cases, sep-

tal defects and coarctation of the aorta, eighteen cases, tetralogy of Fallot, five cases, septal defects and pulmonary stenosis or atresia, five cases, septal defects and transposition, eight cases, septal defects and aortic stenosis or atresia, with or without mitral stenosis, four cases, septal defects and defects of auriculoventricular valves, seven cases, tetralogy of Eisenmenger, one case, idiopathic hypertrophy, six cases, and microcardia, one case.

Dr. Maude Abbott of Montreal spoke briefly on the subject introduced by the two previous speakers. In her experience the correct diagnosis of congenital heart disease in infants under eight months of age is very difficult. A basal interauricular defect has been the most common cardiac finding in mongoloids in her series.

Dr. L. K. Diamond spoke briefly on cardiac findings in severe anemia. Out of a total of 200 patients with severe anemia (R.B.C. less than three million, hemoglobin less than 50 per cent) 40 of the children had a questionable cardiac thrill, a loud murmur, and enlargement. There were definite thrills in eight patients, diastolic murmurs in five. In 35 of the 40 cases the cardiac findings disappeared after recovery from the anemia. Five cases could not be followed up later. Dr. Diamond cautioned in closing that in the presence of a severe anemia or with a history of recent severe anemia the diagnosis of congenital heart disease, based on thrills, murmurs, or enlargements, should be made with reservation. Dr. Paul White concluded the meeting with a brief discussion of the problem of congenital heart disease, and noted the greater ease in diagnosis when we are dealing with adults with congenital cardiac defects. He summarized the findings in 15 cases of congenital heart disease seen at the Massachusetts General Hospital.

BOSTON ORTHOPEDIC CLUB

A meeting of the Boston Orthopedic Club was held on Monday, February 12, 1934, with a clinical program at the Children's Hospital in the afternoon and a paper in the evening at the Harvard Medical School. "Changes in the Head and Neck of the Femur Due to Traumatic and Vascular Disturbances" was the subject of the symposium, led by Dr. Dallas B. Phemister, Professor of Surgery, University of Chicago.

At the afternoon session a series of cases was presented and the discussion headed by Dr. Phemister. Dr. William Green first showed several instances of good results obtained with conservative treatment of slipped femoral epiphyses. Dr. Philip Wilson then presented a case of aseptic necrosis involving the head of the femur following dislocation and another following reduction of a slipped capital epiphysis. Dr. M. N. Smith Petersen reviewed a case of fractured neck of the femur followed by non-union with necrotic head in which he had obtained union, and Dr. Arthur Legg spoke briefly about the epiphyseal changes in coxa plana. Dr. Frederick Cotton followed with further case reviews and dis-

cussion, elaborating the subject of the symposium Dr Frank Ober reviewed the afternoon's work.

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A meeting of the New England Heart Association was held in the amphitheatre of the Children's Hospital on February 26. Drs. Paul Emerson and Hyman Green presided.

Dr. Green first presented for diagnosis three cases of congenital heart disease as they appeared during life, and then, to point out the great difficulty often encountered in making a correct diagnosis in these instances in children and infants, gave the findings after death. The first patient at autopsy showed the following anomalies: absent interventricular septum, defective auricular septum, a foramen ovale four millimeters in diameter, an absent superior vena cava, atresia of the pulmonary artery, an absent spleen and situs inversus of the remaining abdominal viscera. The second case at post mortem showed an idiopathic hypertrophy, with a small patent foramen ovale. The third patient had a small patent foramen ovale, a patent ductus arteriosus and a coarctation of the aorta of the infantile type.

Drs. Green and Emerson next proceeded with a classification of the 74 cases of congenital heart disease seen in the wards of the Children's Hospital in the last five years. All but six cases had either (1) septal defects, one or more in various combinations (open foramen ovale, a defect in the interventricular septum, or a patent ductus arteriosus), or (2) septal defects, one or more with other cardiac defects. The six cases without septal defects were coarctation, one idiopathic hypertrophy, two pulmonary stenosis, one auriculoventricular defects, two tabulated, the cases have been as follows: one septal defect, five cases; two septal defects, seven cases; three septal defects, seven cases; sep-

tal defects and coarctation of the aorta, eighteen cases; tetralogy of Fallot, five cases; septal defects and pulmonary stenosis or atresia, five cases; septal defects and transposition, eight cases; septal defects and aortic stenosis or atresia, with or without mitral stenosis, four cases; septal defects and defects of auriculoventricular valves, seven cases; tetralogy of Eisenmenger, one case; idiopathic hypertrophy, six cases, and microcardia, one case.

Dr. Maude Abbott of Montreal spoke briefly on the subject introduced by the two previous speakers. In her experience the correct diagnosis of congenital heart disease in infants under eight months of age is very difficult. A basal interauricular defect has been the most common cardiac finding in mongoloids in her series.

Dr. L. K. Diamond spoke briefly on cardiac findings in severe anemia. Out of a total of 200 patients with severe anemia (R.B.C. less than three million, hemoglobin less than 50 per cent) 40 of the children had a questionable cardiac thrill, a loud murmur, and enlargement. There were definite thrills in eight patients, diastolic murmurs in five. In 35 of the 40 cases, the cardiac findings disappeared after recovery from the anemia. Five cases could not be followed up later. Dr. Diamond cautioned in closing that in the presence of a severe anemia or with a history of recent severe anemia the diagnosis of congenital heart disease, based on thrills, murmurs, or enlargements, should be made with reservation. Dr. Paul White concluded the meeting with a brief discussion of the problem of congenital heart disease, and noted the greater ease in diagnosis when we are dealing with adults with congenital cardiac defects. He summarized the findings in 15 cases of congenital heart disease seen at the Massachusetts General Hospital.

BOSTON ORTHOPEDIC CLUB

A meeting of the Boston Orthopedic Club was held on Monday, February 12, 1934, with a clinical program at the Children's Hospital in the afternoon and a paper in the evening at the Harvard Medical School. "Changes in the Head and Neck of the Femur Due to Traumatic and Vascular Disturbances" was the subject of the symposium, led by Dr. Dallas B. Phemister, Professor of Surgery, University of Chicago.

At the afternoon session a series of cases was presented and the discussion headed by Dr. Phemister. Dr. William Green first showed several instances of good results obtained with conservative treatment of slipped femoral epiphyses. Dr. Philip Wilson then presented a case of aseptic necrosis involving the head of the femur following dislocation and another following reduction of a slipped capital epiphysis. Dr. M. N. Smith Petersen reviewed a case of fractured neck of the femur followed by non union with necrotic head in which he had obtained union, and Dr. Arthur Legg spoke briefly about the epiphyseal changes in coxa plana. Dr. Frederick Cotton followed with further case reviews and dis-

cussion, elaborating the subject of the symposium Dr Frank Ober reviewed the afternoon's work.

Dr Phemister presented his paper in the evening. This dealt primarily with a demonstration of the radiographic changes observed over a period of time following fractures of the neck of the femur. Dr Phemister's interpretations of the change in radiographic appearance were controlled in each case by photographic and histological examination of the diseased bone where removed by operation.

Dr Phemister thought that a knowledge of the normal blood supply to the head and neck was the first prerequisite to understanding the mechanism of these changes. The anterior and posterior cervical vessels are said to supply the neck and possibly the head. There is some disagreement about the function of the vessels of the round ligament. It is thought that the inferior cervical artery supplies the medial side of the head and the superior cervical the lateral side of the head. Nussbaum disagrees that these vessels ever perforate the epiphyseal line but Dr Phemister thought that they probably did after fusion of the head and neck. The speaker showed slides of injected specimens to demonstrate this point. The capsule is also important in primary and collateral circulation. He stated that interference with the blood supply resulted in an aseptic necrosis of the bone, and later proceeded to show the x-ray evidence of this process as well as other pathological changes which follow.

There are four possible results in the femoral head from fracture of the neck of the femur: (1) a live head with union of the fracture, (2) a live head with non-union of the fracture, (3) a dead head with union of the fracture, (4) a dead head with non-union of the fracture. In Dr Phemister's experience he had treated 17 such fractures. Of these 14 resulted in dead heads and only three in live heads. His work was based on a study both from the standpoint of x-ray and the pathological specimens of 49 fractures. Of these cases the results were 17 live heads, 8 with union and 9 with non-union, 32 dead heads, 4 with union and 28 with non-union.

The pathological changes occurring at the site of fracture consist of necrosis of the cells of the fracture margins as a result of the friction of the non-fixed fragments. After erosion bony union occurs by a creeping replacement of dead bone along the fracture margins by fibroblastic osteogenic tissue. Intermal callus completes the union of the fracture.

Where all tissues remain alive the x-ray shows a regional atrophy with no variation between the appearance of the head and that of the pelvis. The cartilage if undamaged remains intact and the joint space unchanged. Where union is complete the functional result of the hip is good. Dr Phemister thought that the most important point in securing union was in firm fixation of the fragments. Thus impacted fractures do well and are not observed to go through the process of necrosis and creeping replacement observed in other fractures.

The changes to be found by x-ray in the four possible results of fracture of the neck were shown by lantern slides. In each different case the interpretation was checked by the demonstration slides of the pathological specimens, where removed: (1) Live head with union. The density of the head was shown not to vary from that of regional atrophy demonstrable in the adjacent pelvis. (2) Live head with non-union. Generalized atrophy with the density of the head not different than the pelvis. (3) Dead head with non-union. The head having no blood supply retains its bony trabeculae and does not change in appearance while the pelvis and neck become gradually less dense by comparison because of natural regional atrophy. Nature now attempts to repair the dead head by sending in blood vessels and connective tissue from remaining attachments such as round ligament and capsule. This in turn is followed by bone marrow and hemopoietic marrow. This creeping replacement is demonstrable in the x-ray by a gradual decrease in density spreading out from the available sources of blood supply to the dead head. The point of weight bearing is the last to show this replacement process. The cartilage remains intact for one to two years and then may break down. (4) Dead head with union. The x-ray over a period of time shows the same gradual creeping replacement. In such cases care must be exercised to delay weight bearing as this may break down the head after repair is apparently complete.

Dr Phemister showed a few results of other types of less common fractures. In a fracture of the base of the head died because the blood supply by way of the round ligament was thought to be insufficient. In a fracture of the greater trochanter there was death of the part of the head thought to be supplied by the posterior cervical artery. A dislocation of the hip without fracture was followed in one and a half years by creeping necrosis of the head probably because the round ligament had been torn and collateral circulation was insufficient to support the head.

In all of his work Dr Phemister thought that it was evident that the preservation, or loss of blood supply was the major factor in changes in the head of the femur. Yet in children there sometimes occurs aseptic necrosis without history of trauma. Then too the condition known as Legg-Perthes' disease was difficult to understand.

Discussion was opened by Dr Brackett who suggested that longer immobilization of such fractures was a desirable procedure in treatment. Dr Cotton remarked that dead heads with union deserved protection but that dead heads without union had best be removed and the hip fixed. Dr Wilson mentioned that such pathological processes as Dr Phemister had shown also occurred in other regions which were not weight bearing such as fracture dislocations of the shoulder and following arthroplasty where the bone is stripped. Dr Smith Petersen agreed that blood supply is the first con-

sideration but pointed out that in congenital dislocation of the hip the round ligament is known to be of no use and still after reduction by the closed method is often a progressive deformity of the head. This he thought due to destruction of the cartilage by pressure because of the new position.

In concluding, Dr. Phemister briefly mentioned principles of treatment, and thought a fine choice often was necessary to insure the best result. In dead heads with union, too much use caused necrosis but too little use often resulted in non union. In dead heads without union in old people, the best procedure is removal of the head and fusion of the hip. Absorption of the neck of the femur following fracture he thought to be the result of a lack of osteogenic function of the periosteum of the neck, although others think that synovial fluid in the fracture line interferes with union. He knew of no explanation for the necrosis occurring in arthroplasty. He agreed with Dr. Smith Petersen that compression might interfere with the blood supply to the head of the femur.

GREATER BOSTON MEDICAL SOCIETY

A joint meeting of the Greater Boston Medical Society and the Staff of the Beth Israel Hospital was held on March 6, in the amphitheatre of the hospital. Professor Leopold Lichtwitz, Physician in Chief at the Montefiore Hospital for Chronic Diseases, in New York, was the principal speaker. The subject was "The Dynamics of Blood Dyscrasias." Dr. M. E. Barron, President of the Society, presided.

Dr. Lichtwitz attacked the problem of blood dyscrasias in a manner novel to most considerations of the subject. The blood and its cells are not to be viewed only as seen through the microscope, but in a much broader sense. In addition to the actual cell counts as obtained by the ordinary methods the blood volume and total number of cells are of utmost importance. Even though the percentage of hemoglobin and the red blood count be normal, in the presence of oligemia there thus may be anemia. Numerous cases were depicted in illustration. The size of the red blood cells and the great changes in the total surface of the cells in anisocytosis was another point that was emphasized. The importance of this factor in gaseous exchange cannot be overemphasized. The concept of "inactive hemoglobin" was touched upon and the disproportion in polglobulia between hemoglobin content and oxygen carrying capacity was mentioned. After about 150,000 gaseous exchanges the life of the normal red blood cell ends, due to colloid changes in the stroma consequent on chemical activity. This type of aging is an attribute of all colloidal systems, and in the particular instance of blood there is an average destruction of about 100 cc daily. The life of the red blood cell must be less in anemia because of the greater amount of work (gaseous exchange) necessary for each cell. The only known method for studying the colloidal state of the erythrocyte on a

quantitative basis is by a study of cell fragility. After hemorrhage and in anemia the cells are younger and the more fragile, or old, forms are missing. The 'fragility curve' of the red blood cells is thus important in the study of blood-dyscrasias. Blood renovation is explained on the concept that higher frequency of oxygen combination means increased destruction and then formation of new cells. The paper was discussed by Drs. Maurice B. Strauss, William E. Dameshek, William B. Castle, and Joseph C. Aub. All of the speakers emphasized their interest in the viewpoint presented. Drs. Castle and Aub questioned somewhat the accuracy of fragility tests in determining the age of red blood cells, and wondered whether other factors might not be important in fragility as well as mere age, and whether fragility really was a direct measure of age. In closing the meeting Dr. Lichtwitz summarized his views by saying that the duration of erythrocytes is not a function of time but a function of reactions.

HARVARD MEDICAL SOCIETY

The next meeting of the Harvard Medical Society will be held in the Peter Bent Brigham Hospital Amphitheatre (Van Dyke Street entrance), Tuesday evening, April 10, at 8 15 P M.

PROGRAM

Presentation of Cases

The Incidence, Etiology and Treatment of Nutritional Anemia. By L. S. P. Davidson, M.D., F.R.C.P.E., F.R.S.E., Professor of Medicine at the University of Aberdeen.

Dr. George R. Minot will preside.

JOHN HOMANS, M.D., *Secretary*

WILLIAM HARVEY SOCIETY

The next meeting of the William Harvey Society will be held Friday, April 13, in the Auditorium of the Beth Israel Hospital, Boston, at 8 P M.

PROGRAM

Speaker: Dr. Albert A. Epstein, of New York City.
Subject: "Diseases of the Kidney in General Practice."

Chairman: Dr. Henry Baker, Assistant Professor of Medicine, Tufts College Medical School.

MASSACHUSETTS GENERAL HOSPITAL

A Clinical Meeting of the Staff of the Massachusetts General Hospital will be held in the Moseley Memorial Building, on Thursday, April 12, 1934, at 8 15 P M.

CLINICOPATHOLOGICAL CONFERENCE

Three cases will be presented.

Differential diagnosis by Dr. Frederick T. Lord, Dr. Arthur W. Allen and Dr. Fuller Albright.
Pathological discussion by Dr. Tracy B. Mallory.
Physicians, Medical Students, Nurses and Social Workers are cordially invited.

COMMITTEE ON HOSPITAL MEETINGS

NEW ENGLAND ASSOCIATION OF THE JOHNS HOPKINS ALUMNI

The annual meeting of the New England Association of the Johns Hopkins Alumni will be held Saturday evening, April 14, at the University Club, Boston. Dinner will be served at 7 P.M. Dr. E. K. Marshall, Jr., Professor of Pharmacology, will address the meeting after the dinner.

MARSHALL FULTON, M.D. *Secretary*
721 Huntington Avenue, Boston.

PHI DELTA EPSILON FRATERNITY

On Monday night, April 16, the Phi Delta Epsilon Fraternity of Boston University School of Medicine will hold another of its open meetings.

Dr. Frank H. Lahey of the Lahey Clinic will speak on 'Thyroid Disease Its Diagnosis and Management' and Dr. Lewis M. Huxthal, of the Lahey Clinic will talk on 'Myxedema, Hypometabolism, and Blood Cholesterol.' Dr. Allan Winter Rowe, Director of Clinical Research of the Evans Memorial Hospital will lead the discussion.

BOSTON UNIVERSITY SCHOOL OF MEDICINE

WILL CONDUCT A CLINICAL MEETING
AT BOSTON CITY HOSPITAL

Dr. E. Starr Judd, Professor of Surgery, University of Minnesota, School of Medicine, and Surgeon at the Mayo Clinic Rochester, Minnesota, will give a clinic in the Cheever Amphitheatre Boston City Hospital, at 11 o'clock on Monday, April 16, under the auspices of the Department of Surgery of Boston University School of Medicine.

His subject will be Surgical Diseases of the Biliary Tract. Drs. Horace Binney of the Boston City Hospital, Arthur W. Allen of the Massachusetts General Hospital and Elliott C. Cutler of the Peter Bent Brigham Hospital will take part in the discussion.

Physicians and medical students are invited to attend.

OTTO J. HERMANN,
WILLIAM R. MORRISON,
DWIGHT O'HARA

*Committee on Clinics,
Boston City Hospital*

SOUTH END MEDICAL CLUB

The regular meeting of the South End Medical Club will be held at the office of the Boston Tuberculosis Association 554 Columbus Avenue Boston on Tuesday April 17 1934, at 12 noon. The speaker will be Richard M. Smith M.D. Assistant Professor of Pediatrics and Child Hygiene, Harvard Medical School Visiting Physician at the Infants Hospital Associate Physician at the Children's Hospital. His subject will be Acute Abdominal Conditions in Children. All physicians are cordially invited to attend. The usual luncheon will be served.

NEW ENGLAND SOCIETY OF PSYCHIATRY

April 27—The New England Society of Psychiatry will hold its Spring meeting at the Psychiatric Clinic of the Boston State Hospital, Dorchester Center, Massachusetts.

HARLAN L. PAINE, M.D., *Secretary-Treasurer*

AMERICAN HEART ASSOCIATION

The Tenth Scientific Session of the American Heart Association will be held on Tuesday, June 12, 1934, from 9:30 to 5:30 P.M., at the Cleveland Hotel, Cleveland Ohio. The program will be devoted to arteriosclerotic heart disease.

ANNUAL MEETING OF THE MASSACHUSETTS TUBERCULOSIS LEAGUE

The twenty-second Annual Meeting of the Massachusetts Tuberculosis League Inc. will be held at Hotel Statler, Boston on Thursday, April 12. Dr. Frederick T. Lord, President, will preside at the sessions which will begin at 11:00 A.M. in Parlor B on the Mezzanine Floor.

The first session will consist of the annual address of the President, reports of the Executive Secretary, the Educational Secretary and the Treasurer.

At noon there will be a meeting of the Corporation for election of Officers and Directors.

At 12:45 P.M. the annual luncheon meeting will be held in the Georgian Room at which the speakers will be Dr. Henry D. Chadwick, State Commissioner of Public Health and Dr. Kendall Emerson, Managing Director of the National Tuberculosis Association.

Members of the twenty-eight Affiliated Organizations of the League throughout the State are invited to attend the sessions.

The price of the luncheon will be \$1.00. Reservations should be sent to the Massachusetts Tuberculosis League 1148 Little Building, Boston—Telephone, Hancock 5480.

SOCIETY MEETINGS, CONGRESSES AND CONFERENCES

April 5—Faulkner Hospital Clinical Meeting will be held at 5 P.M.

April 5—Hart Hospital Inc. Staff Meeting will be held at 8:30 P.M.

April 5—New England Hospital for Women and Children will hold its regular clinico-pathological conference at 7:30 P.M.

April 10—Harvard Medical Society. See page 778.

April 11—New England Dermatological Society will meet at the Boston City Hospital at 3 P.M.

April 12—Massachusetts Tuberculosis League. See notice above.

April 12—Massachusetts General Hospital. Clinical meeting of the Staff. See page 778.

April 13—William Harvey Society. See page 778.

April 13 20 and 27—Salmon Memorial Lectures. See page 443 issue of February 22.

April 14—New England Association of the Johns Hopkins Alumni. See notice elsewhere on this page.

April 16—Phi Delta Epsilon Fraternity. See notice elsewhere on this page.

April 16—Boston University School of Medicine to Conduct a Clinical Meeting at Boston City Hospital. See notice elsewhere on this page.

April 16-20—The American College of Physicians will hold its Eighteenth Annual Clinical Session in Chicago.

at the Palmer House For information write Mr E R Loveland Executive Secretary, 133-135 South 36th Street, Philadelphia, Pa

April 17—South End Medical Club See page 779
April 23—Physicians Art Exhibit See page 776
April 27—New England Society of Psychiatry See page 779

April 30—The American Board of Dermatology and Syphilology Examinations for Certificates Address Dr C Guy Lane 416 Marlboro Street Boston, for details

May 14, 15, 16, and 17—Thirtieth Annual Meeting of the National Tuberculosis Association For details apply to the National Tuberculosis Association, 450 Seventh Avenue, New York City

May 26, 27, 28, and 29—The American Association on Mental Deficiency Details may be obtained from the Secretary, Dr Groves B Smith Godfrey Illinois

June 12—American Heart Association See page 779

July 24 31—The IVth International Congress of Radiology will be held in Zurich under the presidency of Professor H. R. Schlitz General Secretary Dr H E Walther Gloriastrasse 14 Zurich

September 3 6—American Public Health Association at Pasadena California Dr J D Dunshee, Chairman, Local Committee on Arrangements

September 4, 5, 6—International Union Against Tuberculosis For information address the National Tuberculosis Association 450 Seventh Avenue, New York City

DISTRICT MEDICAL SOCIETIES

ESSEX SOUTH DISTRICT MEDICAL SOCIETY

Thursday, May 3—Censors Meeting, at Salem Hospital 3 30 P.M.

Tuesday, May 8—Annual Meeting Salem Country Club Forrest Street Peabody Dinner at 7 Speaker to be announced Subject to be announced

RALPH E STONE M.D. Secretary

221 Cabot Street, Beverly Mass

FRANKLIN DISTRICT MEDICAL SOCIETY

The next meeting will be held on the second Tuesday of May at the Weldon Hotel Greenfield at 11 A.M.

CHARLES MOLINE, M.D., Secretary

Sunderland Mass

MIDDLESEX EAST DISTRICT MEDICAL SOCIETY

The next meeting will take place in May (2nd Wednesday) at Winchester

ALLAN R. CUNNINGHAM M.D., Secretary

76 Church Street, Winchester Mass

MIDDLESEX NORTH DISTRICT MEDICAL SOCIETY

Meeting will be held on April 25

T. A. STAMAS M.D. Secretary

226 Central Street, Lowell Mass

MIDDLESEX SOUTH DISTRICT MEDICAL SOCIETY

May 3—Censors Meeting will be held at the Boston Medical Library 8 Fenway, Boston

NORFOLK DISTRICT MEDICAL SOCIETY

April 17—Hotel Kenmore, 8 30 P.M. Special Business Meeting

May—Annual Meeting Time place and program to be announced

FRANK S. CRUICKSHANK M.D., Secretary

1695 Beacon Street, Brookline Mass

NORFOLK SOUTH DISTRICT MEDICAL SOCIETY

April 5—12 noon at Norfolk County Hospital. Speaker Dr Elliott P Joslin. Subject Diabetes

May 3—12 noon at Norfolk County Hospital. Annual Meeting Election of Officers

N. R. PILLSBURY M.D. Secretary

Norfolk County Hospital South Braintree Mass

SUFFOLK DISTRICT MEDICAL SOCIETY

April 25—Annual Meeting at the Boston Medical Library Election of Officers Scientific Program titles and speakers to be announced.

The Medical Profession is cordially invited to attend this meeting

JAMES H. MEANS M.D. Vice-President.

GEORGE P. REYNOLDS M.D. Secretary
311 Beacon Street, Boston Mass

WORCESTER DISTRICT MEDICAL SOCIETY

Meetings to be held on Wednesdays as follows

April 11—Open date

May 9—Annual Meeting Time and place to be announced later

ERWIN C. MILLER, M.D., Secretary

27 Elm Street, Worcester, Mass

BOOK REVIEWS

International Clinics Edited by Louis Hamman, M.D. Volume IV Forty Third Series 1933 Published by J B Lippincott Company 317 Pages

Since Dr Hamman has assumed editorial control, the major portion of each volume of these clinics has been devoted to a symposium on some subject. This is a great advantage to the practicing physician as most of the articles in these symposia are reviews of the work of various men who have been major contributors in these fields. Bringing the subject matter up to date so promptly gives it a distinct advantage over the textbook. The symposium in this particular volume relates to the use of endocrine gland products as thyroid, pituitary and supra renal substance and insulin with a discussion of the experimental and clinical background.

There is also an excellent article on the treatment of obesity by Wilder. Finland reviews at length the important problem of the serum treatment in pneumonia. Although the section on surgery is considerably less prominent it has some good articles. In the field of dermatology there is a review of Lupus Erythematosus Disseminatus.

Industrial Health Service By LEVERETT DALL BRISOL. Published by Lea & Febiger, Philadelphia 170 Pages Price \$2.00

The author divides this 170-page manual into three parts. Part I presents an employee health scheme for an industrial plant. Part II relates to methods for carrying out the scheme. Part III gives "what everybody ought to know" information regarding health.

The book is written in the light of a wide and varied experience. The author's fundamentals are sound and his medical advice is refreshingly good.

The book seems well calculated to serve its purpose as a guide for industrial managers and employers generally and to be useful to anybody.

Medical Art Calendar, 1934 Published by J. Phillip Kruseman The Hague. Price \$1.50

This well known Dutch calendar which apparently is a unique contribution to the history of medicine has been published for a number of years. In it are found, attractively reproduced, copies of famous pictures. It is well worth the modest price charged for it.

The New England Journal of Medicine

VOLUME 210

APRIL 12, 1934

NUMBER 15

HERNIA OF THE DIAPHRAGM

Esophageal Type In Adults

BY PHILEMON E. TRUESDALE, M.D.*

HERNIA of the stomach through the esophageal hiatus occurring in adults is now recognized not infrequently by internists, gastroenterologists and roentgenologists. As a rule the history presents nothing characteristic. These patients complain of indigestion. Distress comes on soon after deglutition and is referred to a point high in the epigastrium or in the substernal region. There may be attacks characterized by pain which radiates to the shoulder, the axilla or the back. Pain may encircle the thorax, appear in the form of precordial distress with tachycardia, dyspnea, nausea, and vomiting. Many of these patients have secondary anemia. A. V. Bock has reported a series of this type.

Diseases with which this form of hernia is commonly confused are cholelithiasis, peptic ulcer, angina pectoris and esophageal stricture.

Acute attacks of pain are due to distention of that portion of the stomach which is above the enlarged esophageal opening of the diaphragm.

The following is the report of a case of this type. Dr. Samuel Morein, the patient's physician, submitted this carefully taken history which we have embodied in the hospital record.

E. C. housewife, aged 48 years, was admitted to the Truesdale Hospital September 9, 1933. She complained of indigestion of about twenty years duration. This was manifested chiefly by a bloated and crowded feeling in the epigastrium and the lower left chest, and palpitation. Associated with these was a low substernal pain which was gnawing in character and almost constant. These symptoms were mild at first, but have progressively become more severe in character of late years.

Immediately after deglutition the distress becomes more noticeable and often she has to leave the table during her meals and walk around for relief. Alkalis, laxatives or enemas have no effect in relieving her distress. Green vegetables such as celery and lettuce may bring on a severe attack. She has had attacks manifested by symptoms varying in severity, some were mild while others were severe. Attacks have come on during the night, rousing her from a sound sleep. At times she has induced vomiting to obtain relief from her distress. Some of her pain radiates to the back, left side, left shoulder and down the arm. She also has had attacks that

were accompanied by marked epigastric pain radiating to the back, bloating, belching, nausea and vomiting. On many occasions she was obliged to call a physician and have morphia administered hypodermically to obtain relief from her distress. She experiences palpitation and some dyspnea after the ingestion of a heavy meal or if she retires soon after overeating. She has been constipated for many years but manages to have good movements by taking mild laxatives daily. On several occasions she noticed blood in her vomitus, varying in quantity from streaks to a few teaspoonfuls, and many times she observed that her stools were rather dark, grayish in color. She smoked cigarettes to excess. Her nervous system was fairly stable for one who has a constant gastric disturbance.

Past History. She has had several abdominal operations. In 1914 she had a hysterectomy, also one ovary and the appendix were removed at the same time. During her convalescence she had an attack of pleurisy. In 1926 or 1927 she had a cystic tumor removed from her pelvis. In 1932 she had a tonsillectomy on account of getting frequent colds. She had been treated by many doctors for various conditions. At times gall bladder disease was suspected also myocarditis, anemia and migraine. She had had treatment with temporary relief. About four years ago she was under observation in a very good clinic, at which time a complete x-ray study was made of her chest and gastro-intestinal tract. She was then told she was suffering from colitis. She gave no history of any accidental injuries.

Family History. She has two children, aged 24 and 21, living and in good health. She had no miscarriages. Her husband is living and well. Her family history is otherwise irrelevant.

Physical examination revealed a rather stocky, well developed and nonrushed woman of 48, height, five feet, weight 141, and somewhat anemic in appearance. Her hemoglobin was 70 to 75 per cent and the red blood count was 4,000,000. Her heart and lungs appeared normal except that during the examination splashing sounds were elicited in the central and lower left chest. She was definitely tender in the epigastrium. There were several abdominal scars from her previous operations. No congenital abnormality was noted. Rectal examinations revealed several hemorrhoids. Her blood pressure was 140/80. The blood Wassermann was negative. Her urine was negative. The basal metabolic rate was -13 per cent. Six stools were examined and they were always strongly positive for blood by both the guaiac and benzidin tests.

When the patient consulted Dr. Samuel Morein of Providence, R. I., a complete roentgenographic study of the chest and abdomen was made. Our examinations have corroborated his in all details.

Finorosopic examination of her chest (figure 1), while the patient was standing, revealed a shadow with most of it overlapped by the heart shadow. The heart and lungs appeared normal. After the administration of a barium meal, with the patient

*Truesdale, Philemon E.—Surgeon, Truesdale Clinic, Fall River, Massachusetts. For record and address of author see "This Week's Issue," page 51.

standing, this abnormal shadow was found to be a diaphragmatic hernia of the esophageal orifice type, involving one third of the stomach. The barium

meal was seen progressing down into the lower esophagus, entering the cardiac orifice of the stomach rather slowly, and then progressing upward and filling the upper chamber of the stomach, which was contained in the hernia above the diaphragm. It was also noted that some of the barium was percolating slowly through a constricted portion of the stomach, into the larger lower portion below the



FIGURE 1



FIGURE 3 Postoperative film



FIGURE 2 Preoperative roentgenogram.

diaphragm. This hernia was incarcerated, as there was no reduction by changing the position of the patient, by manipulation, or with deep inspiration. The stomach was otherwise normal. The duodenum appeared normal.

At six hours there was a minute residue of barium left in the hernia. The small intestines and colon appeared normal. The Graham test revealed a normal functioning gall bladder with no evidence of calculi.

The findings in the examination were made clear to the patient and a trial period of medical treatment adopted. This consisted essentially of a dietary régime with antispasmodics, sedatives, and some form of iron medication. During the period of three months she improved slightly but complained of living a life of very limited activity and of general weakness, also of a feeling at times of faintness and dizziness on standing. She also stated that even talking for a while became an exertion. 'Every thing seemed to be an effort.' She felt much better when she abstained from food or when she was hungry.

Her weight on August 17, 1933 was 135 lbs, a loss of 6 lbs in two months. Stool examination on a meat free diet gave a 4 plus guaiac reaction. Her hemoglobin was 70 per cent, red blood corpuscles 3,670,000, and white corpuscles 8,000.

It was therefore decided that surgical intervention would be the appropriate treatment in this case. The impression of the internist, Dr J. A. Mc-

Adams who examined this patient in our clinic was as follows "I am certain that I could not have made a diagnosis of diaphragmatic hernia in this case from the physical signs alone. While these sounds are compatible with a protrusion of a hollow viscus through an opening in the diaphragm the history seems to me to arouse more suspicion than do the physical signs. To be sure, the signs at the base of the left pleural cavity indicate definitely less aeration of the lung than at the right base. Transmission of voice sounds is diminished at the left base. On percussion there is very little difference between the two sides, possibly more of a hyporesonance over the mid region of the left chest posteriorly above the herniated stomach. The heart is not perceptibly displaced. There is a higher level of hyperresonance on the chest wall anteriorly, although not higher than frequently observed in the presence of a distended stomach. Tactile fremitus appears to be but slightly different on the two sides. The gaseous sounds and gurgling are not sufficiently marked to be of any particular help."

This part of the record is reported to show that chances of failure to detect this type of diaphragmatic hernia are real even when the examiner is proficient and careful. The combination of history and physical signs was sufficient to "arouse suspicion." The evidence must be sufficient to arouse suspicion in the mind of the internist or gastroenterologist in order that he may direct the roentgenologist to focus his attention upon the cardiac portions of the esophagus and stomach. Otherwise, hernia might exist and escape recognition even in the hands of an expert roentgenologist. The late Dr. L. B. Morrison¹ of Boston reported a large series of these cases which he had discovered, and described a valuable method of x-ray examination whenever the condition was suspected.

We operated upon this patient September 11th. Under positive pressure gas oxygen anesthesia, the left thoracic cage was opened by half a rectangle incision over the 6th and 7th ribs extending from the left costal cartilage to the posterior angle of the rib. The cardiac portion of the stomach was found protruding upwards through the esophageal aperture, the long diameter of which measured approximately 12 cm. The stomach was covered by a thin membranous sac, apparently adherent, to form a hernia vera. This bulging hollow viscus was adherent to the overlying lung, the left surface of the pericardium and the margin of the opening in the diaphragm.

Owing to the position of the left inferior azygos minor vein with its branches, considerable difficulty was met in separating the collar of fibrous bands attaching the stomach to the lung, pericardium and diaphragm. After this troublesome complication was overcome, the stomach was reduced to its normal position below the diaphragm. The large aperture was finally closed by nine or ten interrupted su-

tures of silk. The opening in the chest wall was then closed by mass interrupted sutures of silver wire.

The early convalescence was accompanied by considerable pain apparently in the thoracotomy wound. The temperature did not rise above 100 degrees. The pulse remained at 120 for three days, then gradually fell to 80. After the fourth day the patient remained on house diet without discomfort. She was discharged October 14th.

Two cases of this type of hernia have been published by the author in the *New England Journal of Medicine* under the dates of June 25, 1931 and September 1, 1932 respectively.

While operative treatment offers the only means of cure of a diaphragmatic hernia of any type, surgery is not indicated in this particular form until medical treatment has had a fair trial. Operation should not be undertaken upon patients who ordinarily would be considered Class B risks.

It requires careful discrimination to determine whether in a given case the symptoms are due to the diaphragmatic hernia. Before deciding to proceed surgically all other causes of the symptoms should be eliminated. It is to be borne in mind also that this form of hernia has been found at autopsy where no history suggestive of its existence during life had been obtained.

It is realized too, that considerable skepticism exists in the minds of many internists and surgeons about the wisdom of undertaking the transthoracic operations for repair of esophageal hernia when it is discovered at or beyond the meridian of life. Time and experience will determine the issue. Thus far we have operated upon six patients with this type of hernia. No deaths have occurred among this group. The series is too small to warrant deductions pertaining to mortality, cure of the condition or technique of the operation itself. Each case appears to be of sufficient significance to record individually. In subsequent reports of the remaining three cases of this series we may feel sufficiently justified to dwell at greater length upon the symptomatology, etiology of pain, technique in the operation and incidentally the important services rendered by the internist, the roentgenologist, the anesthetist, and operating room assistants, the combination of whose support has made it possible for a surgeon to accomplish a difficult task.

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HEREDITARY ECTODERMAL DYSPLASIA OF THE
ANHIDROTIC TYPE, WITH CASE REPORT

BY J MARK HIEBERT, M.D.,* AND JOSEPH GARLAND, M.D.*

HEREDITARY ectodermal dysplasia of the anhidrotic type was first described by Thurman¹ in England in 1848. Detailed and elaborate descriptions are given by Weech² who gave the condition its name. In his report Weech reviews the literature of nine cases, adding two more to the list. Smith³, more recently, has reviewed the literature completely, including a thorough description of the symptomatology, etiology and diagnosis of the condition, and reports the sixteenth case.

Various forms of ectodermal defects have been noted. Clouston⁴ analyzed one hundred and nineteen cases occurring in six generations of one family, none, however, being of the anhidrotic type. Goeckermann⁵ first recognized a group of cases which he called "high grade congenital ectodermal defect" in which there is not only a congenital absence of teeth and a hypotrichosis, but also a total absence of sweat glands and an almost total absence of sebaceous glands.

MacKee and Andrews⁶ described the clinical characteristics of this condition as follows: congenital absence of sweat glands, absence of pilosebaceous apparatus over most of the body, marked dental aplasia, depressed nasal bridge, atrophic rhinitis, prominent supra-orbital ridge, thick protrusive lips, thin, glossy, smooth, dry skin, papular lesions on the face and heat intolerance.

The following case represents the anhidrotic type of hereditary ectodermal dysplasia.

J. B., male, aged five years and ten months was referred to the Children's Medical Department of the Massachusetts General Hospital, October 30, 1933, from the Forsyth Dental Infirmary, because of abnormal dentition. He is the oldest of three children, the two younger being apparently normal.

Family History. The father aged 32 and the mother aged 29 are living and well. A paternal granduncle is said to have been edentulous until the age of five, after which a normal set of permanent teeth developed. No similar anomalies have been noted in any other member of the family.

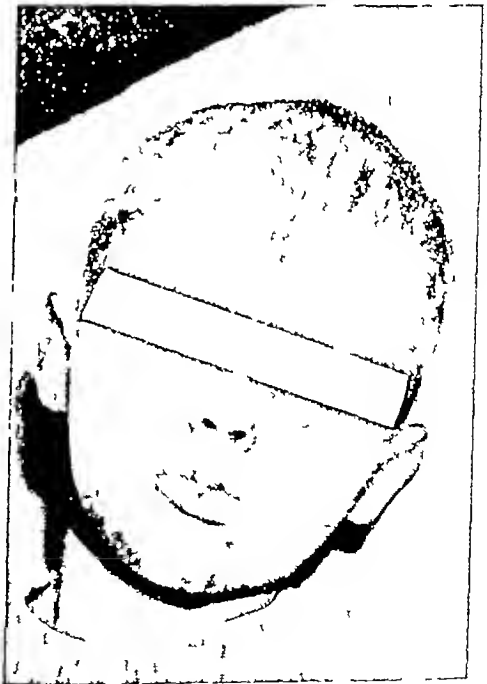
Past History. The patient was normally delivered at term weighing seven pounds. Aside from a pale skin no abnormalities were noted at birth although his cry was never more than a whine. He was nursed from the beginning with supplementary feedings started at three months.

Developmental. He held his head up at four months, sat alone at eight months and walked at seventeen months. The first tooth was cut at eleven months and now at the age of five years and ten

months, he has in the mandible two canines, and in the maxilla one incisor, two canines and two molars. All of the teeth are tusk shaped and widely spaced. In spite of this imperfect dentition he masticates his food in a fairly effective manner.

Present Condition. The patient never perspires, even in the hottest weather and consequently suffers extreme discomfort at times in the summer. His hair has always been sparse and of exceedingly fine texture, with a tendency to break and with scattered areas of alopecia especially in the right parietal region. The palms and soles are always dry and scaly. Since birth he has had a chronic rhinitis. His voice has always been hoarse and he has frequent attacks of complete aphonia.

Physical Examination. Examination shows a well developed normally nourished boy. The height



is 42½ inches, the weight 42 pounds. The skin is dry, hot and parchmentlike to the touch, especially over the shins and thighs. There is no evidence of any perspiration in the axillae or in the folds of the skin.

The head is normally developed with a circumference of twenty inches. The supra-orbital ridges are somewhat prominent. The auricles show no abnormalities, the canals are plugged with a dry, crusty cerumen. The eyebrows are absent, although a few scattered eye lashes are present. The nose is wide and the bridge low. The turbinates and mucous membranes are pale with a moderate amount of yellowish discharge present. The lips are thick, everted, dry and wrinkled. The buccal membranes and pharynx appear normal.

The most striking feature is the peculiar teeth,

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there being in the mandible two canines only and in the maxilla one incisor two canines and two molars all of a peglike conical shape

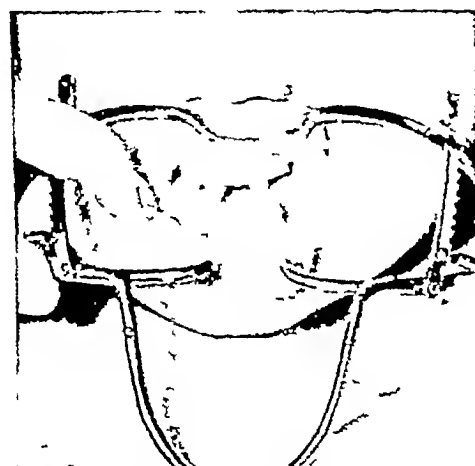
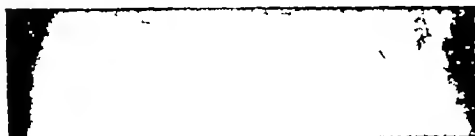
Examination of the chest and abdomen reveals no abnormalities. The nipples are present. The genitals, extremities and nails appear normal.

Mentally the boy responds as a normal, happy alert child.

Laboratory Data

Urine specific gravity 1020 reaction acid
albumen negative sugar negative sedi-
ment no cells or casts

Red blood cells 4,900,000 white blood cells,
6,200 hemoglobin 75 per cent.



Blood smear neutrophils 65 per cent lym-
phocytes 30 per cent monocytes 4 per cent
basophils 1 per cent no variations in
staining reactions no stippling

Hinton negative

Intradermal tuberculin 1:1000 negative

Basal metabolic rate average plus 8 per cent.

Fasting blood sugar 97 mgm per 100 cc cho-
lesterol 154 mgm per 100 cc serum calcium
11.45 and serum phosphorus 4.48 mgm per
100 cc

Skin temperatures were taken as described by
Talbot

	Patient	Standard
Average temperature of face	35.2 C	33.2 C
" " trunk	37.1	35.5
" " extremi- ties	35.4	33.0

rectal temperature 37.8

The skin temperatures of our patient therefore equalled those of normal children with rectal temperatures of 40 C or 104.5 F (Skin Temperatures of Children Table No. 40)

A specimen of skin taken from the back between the shoulder blades was examined in a series of



Section of skin from patient's back showing absence of hair follicles, sweat or sebaceous glands.

sections. No hair follicles, sweat glands or sebaceous glands were found.

X-rays revealed four unerupted teeth in the mandible and two in the maxilla.

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HYDRONEPHROSIS DUE TO SUBEPITHELIAL FIBROSIS TREATMENT BY AN ADAPTATION OF RAMMSTEDT'S TECHNIQUE*

BY SAMUEL N. VOSE, M.D.†

IN a recent issue of the *Urologic and Cutaneous Review* (October, 1933), Dr. David M. Davis reports a case in which he employed in the treatment of ureteral stricture associated with calculus and perireteral abscess, a technique based upon the principle underlying the Rammstedt operation for pylorospasm. A review of the literature indicates that he is the first to report a case in which such a method has been adapted to obstruction in the urinary tract. It is interesting that, in the two cases which are here reported, a similar procedure based on the same principle was applied for the relief of hydronephrosis due to subepithelial fibrosis at the ureteropelvic junction.

CASE REPORTS

CASE I. a white male, aged 22 was admitted to the Urological Service of the Massachusetts Memorial Hospitals on February 17, 1931 for 24 hours' observation and on March 16, 1931 for operation.

Chief Complaint. Frequency of urination.

Family and Past History. Not remarkable excepting gonorrhea eight months previously for which he was treated in the Out Patient Clinic. Urethral and prostatic smears were negative for pus and organisms on several occasions after November 22, 1930.

Present Illness. The present complaint has existed for several months and has been accompanied by intermittent pain in the right loin. Urinalysis on three occasions prior to admission showed microscopic hematuria and the patient was referred to the hospital for complete urological investigation.

On admission regional examination revealed no significant abnormalities. The abdominal examination showed no tenderness at any point. Neither kidney palpable. External genitalia normal. Urinalysis: Specific Gravity 1.027. No albumen, sugar or acetone. Sediment showed a rare pus cell and no blood. Blood Examination: Leucocytes 9,600 per cubic mm., hemoglobin 80%. N. P. N. 30 and Sugar 74 mgm. per 100 cc. of blood. Wassermann and Kahn tests negative.

Cystoscopy. February 17, 1931. A large caliber stricture was found in the bulbous urethra. Bladder capacity and tolerance were normal. No irregularities of the bladder neck. Slight inflammation of the trigone. Ureteral orifices normal. No obstruction to the passage of a No. 5 ureteral catheter to each kidney pelvis. Stasis of 3 cc. on the right side and 7 cc. on the left. Divided function (P. S. P.) test showed 3 per cent on the right side and 2 per cent on the left in 15 minutes. Pyelogram of the left side was unsatisfactory owing to incomplete filling but was checked later by intravenous pyelograms. No definite pathology was demonstrated in the left kidney. The right pyelogram showed some dilatation of the pelvis and calyces with a narrow

ing at the ureteropelvic junction (fig. 1A). Urine from the bladder and each kidney was negative for pus or organisms and culture showed no growth.

Operation. March 18, 1931. The right kidney and upper ureter were exposed by the usual loin incision. Rather more than normal adhesions were found around the kidney pelvis and ureter. A definite narrowing existed at the ureteropelvic junction which seemed to be due to a narrow area of fibrosis in the ureteral wall and surrounding the ureter. It seemed that the division of this fibrous band without incising the mucosa, as in the classical operations, might relieve the stenosis. A longitudinal in-

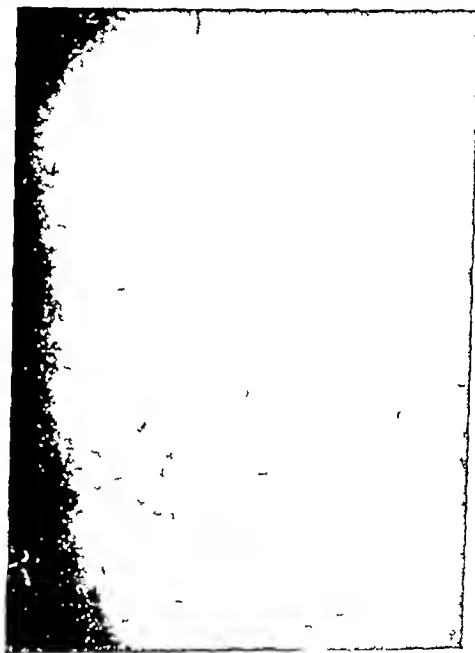


FIGURE 1A.

cision one-half inch long was made in the wall of the ureter down to but not through the mucosa and as the edges drew apart, the mucosa could be seen bulging into the incision. After this incision was made the width of the ureter at this point became practically the same as that of the ureter below. Neither ureter nor pelvis was opened. The operative wound was closed without drainage. Convalescence was uneventful and the wound firmly healed on April 2. On April 3, the ureter was dilated with bougies and the patient was discharged from the hospital on the sixteenth postoperative day. He still had some frequency, but was relieved of pain in the loin.

Ureteral bougies were passed on August 18 and again on October 20, 1931. At this time 6 cc. of urine free from pus or organisms was aspirated from the right kidney pelvis. A pyelogram was made (fig. 1B). The patient stated that he was free from symptoms and failed to report for further check-up.

Comment. It is difficult to evaluate the importance of the operation in the relief of the patient's

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symptoms, as the frequency and microscopic hematuria may well have been caused by the pathology in the lower urinary tract, and the pain in the loin might have been relieved by freeing the adhesions around the kidney. The principal evidence of the efficacy of the procedure employed is the altered appearance of the ureteropelvic junction as shown in the pyelograms.

CASE II, a white male, aged 17, was admitted to the Urological Service of the Massachusetts Memorial Hospitals on September 6, 1932.

Chief Complaint Pain in the left loin and left upper quadrant.



FIGURE I B

Family and Past History Not significant.

Present Illness Began about one year previously with a dull aching pain below the left costal margin. Attacks of pain have been intermittent, recurring at monthly intervals and lasting several days. The pain has been severe enough to require morphine. There have been no associated gastrointestinal or genitourinary disturbances.

On admission, regional examination reveals no significant pathology. Abdomen soft and pliable. Slight tenderness in the left upper quadrant and in the left loin. External genitalia normal. Urinalysis: Specific Gravity 1.009, no albumen, sugar or acetone. Sediment showed no abnormal elements. Blood examination: Leucocytes 8900, hemoglobin 80%, N.P.N. 32 and sugar 74 mgm per 100 cc., Wassermann and Kahn tests negative.

Cystoscopy September 10, 1932. Bladder capacity and tolerance normal. Bladder mucosa was normal throughout as were the ureteral orifices. A No. 5 catheter was passed to the right kidney pelvis without obstruction. Two cc of clear urine aspirated. A No. 4 catheter was passed up the left ureter to the kidney pelvis and 200 cc of clear urine aspirated. Pyelograms were made. On the right side there was slight dilatation of the kidney pelvis with normal calyces. The kidney was low and there was a kink in the upper ureter. The left pyelogram is shown in figure II A, a large hydronephrosis and the ureter not dilated below.

In view of the possibility of a nephrectomy being necessary on the left side, it was considered advisable to do a nephropexy on the right side. This was performed on September 13, 1932. Little pathology was found at this operation.

Operation September 30, 1932. Under spinal novocain anesthesia, the left kidney and upper ureter were exposed by the usual loin incision. Examination of the kidney showed considerable apparently healthy kidney tissue. The pelvis was greatly dilated. The upper ureter was attached to the kidney pelvis by fascial bands and across the lower part of the pelvis but well away from the ureteropelvic junction and the ureter was an aberrant blood vessel. This apparently was not a factor in the obstruction. The ureter was freed from the pelvis by dividing the fascial bands. At the junction of the pelvis and ureter was found a narrowing due to an area of fibrous tissue surrounding the ureter. The pelvis was incised and the fluid evacuated. A bougie was passed down the ureter with some difficulty. On withdrawal it was firmly grasped by the ureter at the narrow portion. A longitudinal incision about 3/8" long was made in the wall of the ureter through the fibrous area and down to but not through the mucosa following which a No. 12 soft rubber catheter could be easily passed down into the ureter. The redundant wall of the pelvis was resected by the removal of an elliptical section from the inferior surface the incisions starting about 1/4" above the ureteropelvic junction and extending nearly up to the kidney substance. The open end of the rubber catheter which had been



FIGURE II A.

passed down the ureter was brought out through a nephrostomy opening for constant drainage of the pelvis. The cut edges of the pelvic wall were approximated by two layers of O chromic catgut. The perirenal area was drained by rubber tissue and the operative wound closed by layer sutures.

Convalescence was uneventful. The catheter which served as a nephrostomy tube as well as a splint for the ureter was removed on the fourteenth postoperative day and for 48 hours there was slight leakage of urine through the sinns after which it remained dry. The patient was discharged on the twentieth postoperative day with both wounds firmly healed voiding normally and free from pain.

He returned to the hospital for dilatation at intervals of several months and on April 14, 1933, ureter catheterization revealed in the left kidney pelvis a residuum of 10 cc of clear urine free from pus and organisms. He had been free from all symptoms and had gained 25 pounds in weight since his operation.



FIGURE II B

On October 21, 1933, about one year after operation, the left ureter was dilated by bougies and a residuum of 15 cc of clear urine found in the left kidney pelvis. Indigo carmine injected intravenously appeared on each side in good concentration in five minutes. A pyelogram made on that date is shown in figure II B. The patient continues to be free from all symptoms.

Certain experimental work, notably that of Hinman¹, has tended to cast some doubt upon

the advisability of attempting conservative operations in cases of unilateral hydronephrosis. The results in the second case reported are in line with an increasing amount of clinical evidence indicating that considerable functional regeneration may be expected even in well advanced cases *provided the obstruction be completely relieved*.

There is considerable difference of opinion as to the relative importance of several etiological factors in the causation of so-called primary hydronephrosis. Disregarding the secondary effects of anemia and infection, and considering only the primary obstruction, there appear to be good reasons for agreeing with Geraghty and Frontz² that many cases originate from inflammatory processes in the ureteral wall, and that in certain instances, at least, kinks, abnormal implantations and obstructing blood vessels may be secondary to the distorted anatomy resulting from dilatation of the pelvis. Walters³, however, places subepithelial fibrosis third in a list of causes of obstruction. Whether the obstruction be congenital or acquired (inflammatory), there exist certain cases in which the mucous membrane is little, if any, affected. In such cases, an extramucosal division of the fibrous constriction, combined or not with such measures as resection of the renal pelvis or nephrostomy, as indicated in the individual case, may result in the complete relief of the obstruction so essential to the success of conservative operations.

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LOCAL ANESTHESIA IN OBSTETRICS

BY CORNELIUS T O'CONNOR, M.D.*

ARTHUR Hertzler¹ remarks, "Many of the current writings on local anesthesia bear very obviously, the mark of having undergone a new experience, which they are anxious to proclaim to the world. It reminds one of the young swain who first kisses his sweetheart in the moonlight. He thinks he has discovered something new and wholly new. He has and he hasn't, it depends on the point of view." Having followed the literature on the subject of local anesthesia in obstetrics, having read the standard texts and monographs and having talked with colleagues as to the methods of anesthesia used by them, the writer is well aware that he has no new method, but he feels also

that there is a definite field in obstetrics for its use and that it deserves more consideration than is given it. The use of various drugs particularly the barbiturate preparations, has been exhaustively, even exhaustingly discussed in the literature.

Spinal anesthesia has been the subject of many papers, and of course the tetrad of general anesthetics, ether, chloroform, ethylene and nitrous oxid have been dealt with adequately. But when the subject of infiltration or nerve block local anesthesia is considered there seems to be both apathy on the part of obstetricians in their daily practice, and a paucity of articles in the literature. J W Williams in his text in the sixth edition states that he has had no experience with the method. He says that Gellhorn

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is enthusiastic concerning its use in the second stage of labor in conjunction with "twilight sleep" According to Williams Gellhorn's method is direct infiltration of the perineum and the levator muscles with one half of one per cent novocaine solution The text of Shears Jellet and Madill, and Solomon's revision of Tweedy's manual contain no reference to the use of novocaine or similar preparations in normal or forceps delivery Joseph L Baer says in speaking of the conduct of normal labor, "Infiltration anesthesia of the cervix and perineal body has not won general approbation and is not to be recommended" Ralph M. Tovell³ says, "Sacral block is to be generally preferred over less precise and less satisfactory methods such as infiltration of the perineum or nerve block of the inferior pudendal and inferior hemorrhoidal nerve" By sacral block he means sacral anesthesia injecting about one ounce of one per cent novocaine solution through the sacral hiatus plus transsacral (sacral foramina) injection J B DeLee alone, is enthusiastic about the use of local anesthesia In the sixth edition of his textbook he says, "Wherever in obstetrics as in surgery, it is possible to operate under a local novocaine infiltration or nerve blocking this should be done since unquestionably the dangers are more than halved by the avoidance of general anesthesia In the Chicago Lying-In Hospital, in the home service of the Chicago Maternity Center, central episiotomy and repairs are usually done under 'local'"

In 1916, Robert W King⁴ in an excellent paper to which little attention seems to have been paid, said "While marked advancement has been made in the realm of anesthesia as applied to the local and general blocking of the sensory nerves of various parts of the body, it is strange that so little attention has been paid to applying these methods in the sensory innervation of the female perineum The literature of this subject is remarkable because of its scarcity, the subject apparently has not engaged the attention of American investigators and practically the only work of importance that has come to my notice, has been carried on in Germany" After carefully working out the anatomy and nerve supply of this region, King reported his results in nearly one hundred injections His conclusions were that lacerations were diminished, that anesthesia began in a few minutes and lasted for two to four hours, that repair was greatly facilitated, and that the general practitioner can safely and easily apply the method at the bedside

D Rose⁵ proposed a nerve block of the abdomen for relief of pain during the first stage of labor and direct infiltration of the perineum for the second stage of labor He was particularly interested in the use of novocaine for the first stage of labor Abdominal nerve block is

unnecessary, as various safe drugs exist for the production of analgesia during the first stage of labor He infiltrated the perineum and labia instead of doing a block of the perineal nerve

T Torland⁶ states that he has used local anesthesia of the perineum, for the past eight years in practically all primiparae and many multiparae, using a perineal nerve block He has injected novocaine in several hundred cases without complications or untoward results Some form of twilight sleep was used during the first stage of labor He feels that ether or gas anesthesia can usually be reduced to a minimum and can frequently be omitted In conclusion he states "When to this can be added the absolute assurance that this perineal anesthesia has no remote results, has no influence on the uterine contraction has no higher incidence of infection and no difference in wound healing, and that it can without much experience be used by anyone in the home as well as in hospitals it seems that we have here a method of considerable importance which merits further investigation and more extensive use"

DeLee⁷ unqualifiedly supports this view

M Oku⁸ used local anesthesia in one hundred cases He believes that there are no contraindications to this form of anesthesia except for purulent inflammation at the points of injection and their neighborhood He believes that the procedure is simple and harmless, that it removes all pain relaxes the muscles that the second stage is often shortened, that the number of episiotomies and lacerations is diminished, that forceps operations and breech extractions may be done under this anesthesia and finally that no disturbance in the labor pains, the separation of the placenta or the contractions of the uterus was observed

Abdurel⁹ uses nupercaine (percaine) He believes that it produces a more prolonged anesthesia than does novocaine A Reist¹⁰ does a pudendal nerve block using nupercaine "Ciba" (one to two thousand), using about 50 cc for each pudendal nerve Of thirty cases, the anesthesia was very good in twenty-seven and partial in three He prefers nupercaine to novocaine because the anesthesia in the case of the former lasted as long as six hours and nearly always four hours J P Greenhill¹¹ uses infiltration anesthesia for spontaneous and low forceps deliveries His technique is as follows,

"the needle is inserted about midway down one labrum majus and the solution is injected all along the edge of the labium then across the fourchette and up the edge of the other labrum majus It is usually necessary to remove and reinsert the needle a few times, but one must always reinsert the needle in an area which has already been infiltrated With Allis forceps, slight traction is then made on the infiltrated fourchette and solution is injected in the layer between the vaginal wall and the rectum not only in the midline, but also well out

to the sides in the shape of a fan. The needle is inserted about 6 cm in each direction and about 30 cc of the solution is distributed in this space. Then the needle is inserted deeply through the fascia over one levator ani muscle and about 10 cc of the solution is injected into the muscle and the fascia. This is repeated on the other side. Within a few minutes, examination will reveal relaxation of the entire perineal floor and gaping of the vaginal outlet. Because of this, the patients do not experience the forcible stretching of the perineum which most primiparae do. The second stage is shortened if there is no interference with the uterine contractions. The head passes through the outlet without any pain. If there is breech presentation, spontaneous delivery may be accomplished or manual aid rendered with little discomfort. In some cases labor pains slow down after the infiltration and it is necessary to apply low forceps or give two or three minims of pituitary extract. Perineal lacerations are reduced in number and size and there is less need for episiotomy. If a laceration occurs it may readily be sutured without the addition of any anesthetic.

There is then a striking unanimity of opinion as to the advantages of local anesthesia in obstetrics, among those who have used the method. What then is the reason for the indifference of obstetricians to the use of local anesthesia? It is possible that the explanation lies in the following: (1) Some surgeons will never be interested in local anesthesia, nor will ever use it successfully because they are temperamentally not adapted to its use. Deliberation, anatomical knowledge, patience, and frequently gentleness, are often required. (2) Many obstetricians have not been interested in its use because they have not realized that excellent muscular relaxation will be produced if a successful nerve block has been done. (3) Possibly when local anesthesia is mentioned, in many obstetricians the mental phantasm arises of a massive infiltration of the levators and the perineal body rather than a more precise nerve block of the pudendal nerve. (4) The knowledge that very apprehensive individuals are not good subjects for local anesthesia. It is to be remembered that, with the use of the various sedatives and hypnotics in the first stage of labor, this is no longer a factor. (5) A fear of a reaction from the amount of novocaine used. There need be no reaction if any of the barbiturate preparations are used before the injection. (6) Possibly a persistence of the old notion that pregnant women tolerate general anesthesia very well. J. T. Wallace¹¹ found on the obstetrical service of the Brooklyn Hospital during 1932 three cases of intrapartum and postpartum collapse due to aspiration during or following ether anesthesia. The writer recently had a case of alarming symptoms due to inhalation of vomitus following ether. It is probable that every obstetrician has had experiences such as these. DeLee¹²

says, "The longer one's experience grows the more one respects the dangers of general anesthesia."

The writer has used local anesthesia on primiparae for the past four years and uses the following technic. Ampules containing 5 cc of twenty per cent novocaine (Metz) are used. Dilution to 100 cc with normal saline makes a one per cent solution, to 150 cc makes a two thirds per cent solution. Either of these strengths seems to be satisfactory, more so than a one half per cent solution. With a sterile medicine dropper fifteen drops of one to one thousand adrenalin solution are added. This is essential. So great is the blood supply of this area that the anesthesia will be quite evanescent unless the adrenalin is used. Moreover an injection of a few cc of the adrenalized novocaine solution makes an episiotomy often bloodless. These 20 ampules are simpler to use than the tablets which must be crushed before use. Referring to the use of tablets which have incorporated in them epinephrine, Hertzler¹ says, "These are not always stable and it is best to employ the epinephrine solutions." Any type of syringe may be used successfully for the injection. The writer uses a Dunn syringe which is a two-way syringe of 3 cc caliber. With this type of syringe it is not necessary to refill. About 5 to 10 cc are injected into the spot where the episiotomy is contemplated. The ischial tuberosity is palpated. Fifty to 70 cc of one per cent or two thirds per cent novocaine solution are injected about one centimeter medially and caudally to the ischial tuberosity, at a depth of about 7.5 cm. If a two way syringe is used, it is kept moving slightly so as not to inject into a vein. If a large syringe is used, aspirate first to be sure that the needle is not in a vein. Use a needle which will bend but not break. The needle ought to be about 10 cm in length. In thin women 50 to 60 cc on each side is sufficient. In stout women 60 to 70 cc on each side should be used. About 5 cc is then injected in each labium majus and about 10 cc on each side of the sphincter and about 3 cm in depth. In a successful injection the relaxation is as complete for the outlet as it is under a surgical anesthesia. (See illustrations 1, 2, & 3.) The percentage of successful injections will vary. After it has been used by an individual twenty-five or thirty times, the nerve block is perfect in nearly every case in thin or normal women. In stout patients it has been the writer's observation that occasional partial failures result. Even in these, the amount of general anesthesia required is less and this is advantageous. For the normal delivery one of the barbiturate preparations plus scopolamine is used during the first stage. Occasionally a small (forty-five milligram per kilo) dose of avertin is used in the second stage. This or gas oxygen is valuable in the type of patient who is very restless under drugs of the barbiturate series. The

writer hesitates to use more than 45 mg in addition to drugs of the barbiturate series which have been used previously. For midforceps operations gas oxygen is necessary, as the blades pass into unanesthetized areas. This is no objection, however, as the writer has noticed on two occasions doing midforceps, that involuntary pushing of the patient when traction was made on the forceps, appreciably helped in the descent of the head. The amount of gas as re-



ILLUSTRATION 1

Block of perineal nerve. About 10 cc have been injected into site of proposed medio-lateral episiotomy. Gas oxygen administered until injection is done. This requires 2 or 3 minutes.

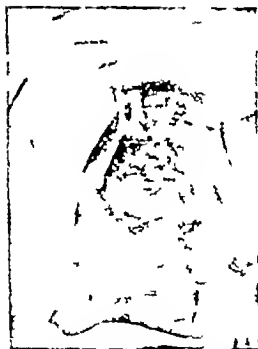


ILLUSTRATION 2

Delivery. No general anesthetic is being administered. Baby's weight 7 pounds. Patient is a primipara.



ILLUSTRATION 3

Repair of episiotomy. Bleeding from separating placenta. Clear cut avascular tissues due to adrenalin. No general anesthetic is being administered.

lated to the percentage of oxygen is less than when novocaine is not used. It is never necessary to produce even the slightest cyanosis to get results. As soon as the head is on the pelvic floor, gas oxygen may be omitted. Where the patient is very restless under the use of hypnotics such as sodium amytal, phenobarbital sodium, pentobarbital sodium, dial, sodium alurate etc., the use of gas oxygen (50 per cent gas, 50 per cent oxygen) is necessary until delivery is completed. In this case a small dose of avertin may also be used rather than the gas oxygen. Manual aid to breech delivery requires only local anesthesia, or at the most local plus 50 per cent gas 50 per cent oxygen. In the decomposition and extraction of a breech, however, fol-

lowing the technic of Irving and Goethals¹³ and Piper¹⁴ it is necessary to use ether or avertin in order to get relaxation of the lower segment of the uterus. Local anesthesia in addition will give the following advantages: 1 Routinely perfect relaxation of the outlet. 2 Less bleeding from the episiotomy which is now a routine in breech extraction. 3 Often a smaller episiotomy than with ether alone. 4 The use of less ether because the episiotomy may be sewed up under the action of the local, the ether being withdrawn as soon as the baby's head is on the perineum. The writer feels that the same advantage applies to the use of novocaine in the performance of version and extraction. There have been no reactions in over seventy-five private cases and there has been no infection in the areas injected. A consideration of the tremendous blood supply of the parts will bring the realization that infection should be indeed a rarity. Neither more nor less episiotomies should be infected whether done under a general or local anesthetic. Anesthesia produced with novocaine lasts three-quarters of an hour to an hour. It may last longer, but this duration can be depended upon. As noted previously, Abdurel⁹ and Reist¹⁰ state that they obtain an anesthesia lasting for four or five hours with one to one thousand or one to two thousand nupercaine solution.

Three other methods of using novocaine in obstetrics should be considered. 1 Caudal anesthesia. J W Kelso¹⁵ used it in thirty-four cases. He felt it had the following drawbacks: (1) It must be given only under the strictest precautions and cannot therefore be used in the average home delivery. (2) The administration is technically not easy, it is not always possible to gain entrance to the hiatus. (3) He felt that this anesthesia produced a certain amount of inertia in practically every case. In a personal case the insertion of the needle into the hiatus resulted in the presence of spinal fluid, necessitating the withdrawal of the needle, as the doses used for this anesthesia would almost certainly have produced serious consequences if injected into the spinal canal. The method of sacral block which was preferred by Tovell³ to perineal nerve block, consists in a caudal anesthesia plus injection of each sacral nerve, gaining entrance to the foramina posteriorly. The writer has not used this method. It would seem open to the same objection as caudal anesthesia plus the fact that more time is consumed in the injection of the sacral nerves individually. Moreover from Tovell's description the procedure would not seem to be easy technically. The third method of using novocaine is that of spinal anesthesia. M F Eades¹⁶ used this method in one hundred and twenty-one cases. They were all, however abdominal obstetrical operations. His conclusions were

that it had a definite place in abdominal obstetrical surgery when the use of general inhalation anesthesia was contraindicated, but that the method was safe only with a judicious selection of risks and careful technique of induction, and a close observation of the patient during anesthesia and preparedness for any unfavorable reaction. He felt that it was contraindicated in bad risks or when shock or hemorrhage was present. The dosage used by him was 200 mg. In normal deliveries or in low forceps operations or breech extractions, a smaller dose than this would be quite sufficient. Not over 100 mg should be necessary and 75 should suffice for normal or low forceps cases. Eades¹⁷ feels that a dose of 75 to 100 mg of novocaine crystals is perfectly safe. Further experience may show that in well-equipped hospitals spinal anesthesia in doses of 75 to 100 mg may have definite advantages in some cases over nerve block of the perineum.

SUMMARY

1. The technique of the use of local anesthesia for normal and low forceps deliveries by infiltration of the perineum, and by block of the pudendal nerve is described.

2. The method is simple and safe. The criticism that it is a "hit or miss" method is true of any nerve block. The greater one's experience the fewer the "misses." Its use is suggested for the termination of labor in those patients for whom a general anesthetic is contra-

indicated. It is particularly suggested in toxemic patients.

3. Its use is also suggested in addition to a general anesthetic in breech extraction in primiparae, and following versions. A successful nerve block produces excellent relaxation of the outlet, a condition postulated by Potter, as a cardinal prerequisite for a successful extraction.

4. Where a general anesthetic is necessary it will reduce the amount needed.

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RIGID FLAT FOOT—REMODELLING

BY FREDERIC JAY COTTON, M D,* AND GORDON MACKAY MORRISON, M D*

THERE is nothing new about the recognition of flat feet of long standing that have become utterly rigid, so far as tarsal flexibility goes. Nothing new about forcible remodelling of selected cases of this sort. There is, however, something to say about choice of cases and there is something to say about an instrument (most simple) to which we have no claim save that of adoption, that helps a great deal. There is something to say about the ultimate remodeling, in the plaster boot, and something also about the *physiology* of recovery of function and proper stance. As to choice of cases, there is no use in attempting simple mobilization in feet in which years of growth with distorted bone relations have resulted in considerable change in the bony "architecture." Any successful remodelling of such feet must include remodelling of bone. Only feet rigid from spasm and con-

tracture with decently normal bone shapes are fit for manipulation remodelling.

As to the instrument (fig 1) it is a very simple "strap wrench" devised by the late Dr Gwilym G Davis of Philadelphia. It is of 3/8" tool steel of good quality welded and tempered, or the apparatus will buckle up under use. The straps A & B are simply buckle straps of 1" or 1 1/4" webbing. The whole instrument is about 18" long. Only the straps come in contact with the skin and do not bruise even under heavy leverage.

Its original use was for stretching a tight tendon Achilles*, but it is most serviceable where one needs more force than that of the bare hand for correction in any direction, and much force is usually needed, for, in order to attain correction one must first *overcorrect* these deformed feet. Otherwise, the tension of the plaster to maintain position is unbearable. It is not the violence of the reduction, but the stretching of *untorn* tissues that gives pain. If this is re-

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*And properly used for this it renders the once fashionable operative lengthening of heel cords a rare operation.

membered such corrections do not give great postoperative pain

As to the ultimate remodelling, one point not perhaps quite easy to make clear is of para-

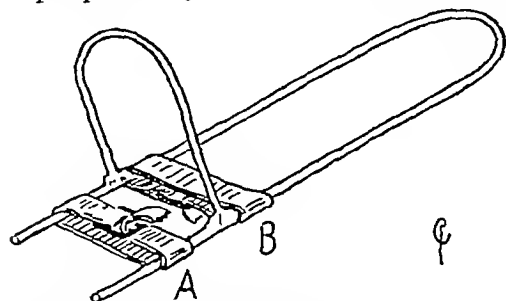


FIGURE 1 The Davis strap wrench

The essentials are the hairpin shaped lever and the two webbing straps through which leverage is exerted on the foot in the desired direction. The short bow simply braces the long rods apart. Otherwise under the heavy strain they would bend inward.

mount importance. If we correct the whole foot inward into varus position as in A of figure 2, then when the plaster comes off the *front part* of the foot must needs come back to the flat surface and in so doing is at least as likely to swing the whole foot (heel included) at the subastragaloid joint as at the mediotarsal level. That, if it happens pretty much spoils our correction. If however, the foot is corrected into varus, the heel then held in sharp varus (see

B) while the front part of the foot is brought back to neutral position, then this recurrence of deformity does not happen. This can be done though it calls for good plaster work.

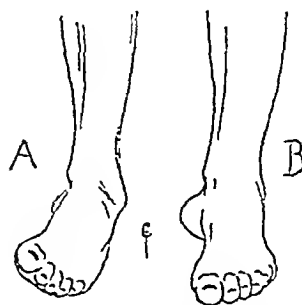


FIGURE 2 A. The usual position in which a remodeled flat foot is apt to be put up. Unfortunately in this position the mediotarsal joint stiffens somewhat and when the sole comes flat it is very doubtful which joint will go back into eversion.

FIGURE 2 B. The proper position. The foot is put up in plaster with the heel just as sharply inverted but with the front part of the foot already rotated at the mediotarsal joint to the position of the normal tread.

If this is done, then a few weeks of exercises, and the wearing of the efficient (if not too comfortable) Whitman "rocker" plates, are apt to be followed by gratifying results.

It is recognized that this handling is heresy—that is to say it is not what is taught but it is sound physiological mechanics,—and it works.

A SEPARATE OSSIFICATION CENTRE FOR THE INTERNAL MALLEOLUS

BY ALEXANDER P. AITKEN, M.D.*

MUCH has been written about the "Occasional Epiphyses and the So-Called Additional Bones of the Foot." Notable among these are the os trigonum and the epiphysis at the base of the fifth metatarsal. However in all the literature we have been able to find but one reference to the condition which we are about to describe. Poland in his classical work "Traumatic Separation of the Epiphysis" quotes a case of Beclard, as follows:

"Beclard has once seen and described a special centre for the internal malleolus immediately joining the principal portion, but the author has never seen a distinct epiphysis and its occurrence must be extremely rare."

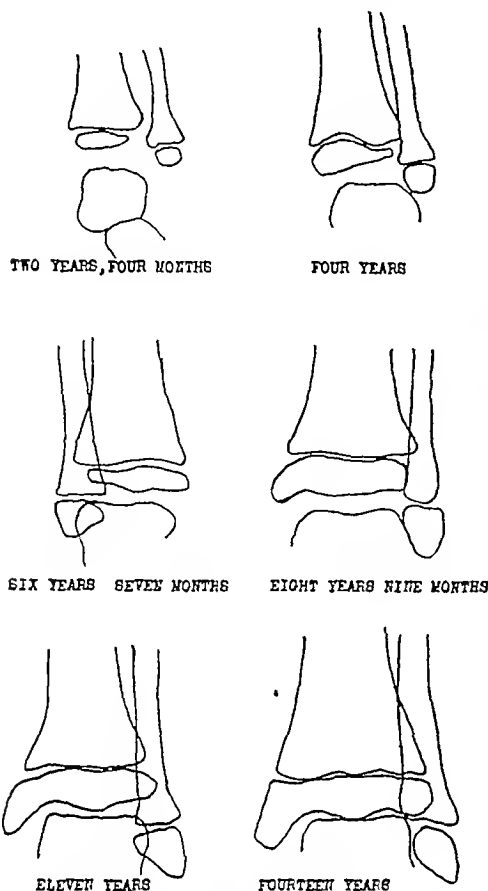
The internal malleolus usually develops along with the distal articulating portion of the tibia from the distal epiphysis, the development of the internal malleolus occurring as a downward growth from the inner side of the epiphysis. Up to the sixth year no definite internal malleolus can be seen by x-ray, however a definite downward growth does begin about this

time (Cohn). At about eight and a half years a definite downward projection is noted on the inner side of the epiphysis. From the tenth to the eleventh year, a definite internal malleolus is formed. By the fourteenth year there is usually a complete ossification of the epiphysis of the tibia, although the epiphysal line is still present. This line does not disappear until about the sixteenth year (Cohn).

The following case is interesting in that it shows that the internal malleolus need not develop as above but from an ossification centre of its own. Also, when this condition does exist, it might well be mistaken for a fracture.

CASE. H. H. aged ten years. Admitted to the Chelsea Memorial Hospital with a history of having had his left foot caught in the rear wheel of an automobile. The left ankle was swollen and there were two lacerations over the lateral aspect of the lower leg and ankle. There was considerable tenderness over the external malleolus. X-rays were taken for a questionable fracture of the fibula. These revealed a definite crack through the internal malleolus which was interpreted at first as a fracture. However closer inspection of the dry plates revealed the fact that the fractured edges were lined with a very fine layer of cortical bone. This brought up the question as to whether this was not actually an ab-

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Tracings of roentgenograms of the normal ankle at various ages showing the usual development of the internal malleolus

normal epiphysis. An x-ray was then taken of the opposite uninjured ankle, and a similar picture found in the internal malleolus, giving conclusive proof that we were dealing with an abnormal epiphysis.

According to the literature, or rather to the absence of literature, it would seem that this condition is exceedingly rare. However, it is possible that if all fractures of the internal malleolus were more carefully examined, especially for the presence of a thin cortical layer, as one sees in the os trigonum, perhaps this condition is not actually so rare as it might seem.

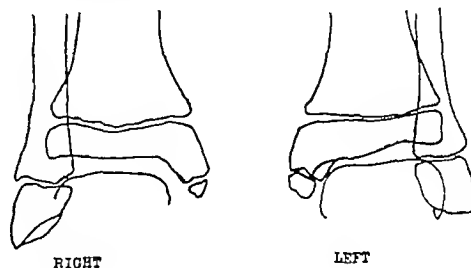
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THE ADDRESS OF DR. STEPHEN RUSHMORE
AT THE HEARING ON HOUSE BILL 118*

HOUSE Bill 118 has been presented in accordance with Chapter 112, Section 4 and Chapter 30 Section 33 of the General Laws, having been drafted by Counsel for the House and is part of the Annual Report of the Board of Registration in Medicine. By vote of the Board, the Secretary has been only authorized to make representations for it and much of what is submitted to this Legislative Committee is an amplification of material already incorporated in the Report but not yet published.

The object of the Bill is to give increased protection to the health of the people of Massachusetts by raising the qualifications for the practice of medicine. The recommendations of the Board concern several minor modifications of detail, and one important change in procedure which is to give the Board power of approval of medical schools from which it receives candidates for examination.

In the recommendations of the Board, which accompany the Bill, there are discussed adequately, I think, all of the minor changes suggested, and they will need no amplification at this time, although I shall be glad to answer questions about them if the Committee desires. I shall discuss briefly the important change concerning approval of medical schools, which is the feature of most significance from the point of view of protecting the public.

Before discussing the new bill, I would like to say a few words about a noteworthy change in the medical practice act made in 1933. The provision to which I refer is the requiring of the candidate that he spend four years of not less than thirty-two weeks in each year in some medical school. The significance lies in the fact that for the first time in the history of medical legislation in Massachusetts, attention has been paid to formal medical education as a qualification for practice. The requirement as worded is not severe, but the direction in which it carries the statute is absolutely new, and is in the line of progress. The requirement is not that the candidate shall take certain courses and complete them in a manner satisfactory to the school, not that he shall advance from year to year in a graded medical course, but merely that he shall live through four years of attendance in a medical school. It does not represent a very high standard but it is better than the statute before the amendment of 1933.

The object of the new bill is to raise the qualifications for the practice of medicine in Massachusetts. Are the qualifications not high enough already? From the point of view of the

person who is ill, the qualifications cannot be too high, we would like every patient to have the best that the science and the art of medicine can give. That is ideal, but the statute cannot deal with ideal conditions, it can establish only reasonably high minimum standards of qualification below which it is not safe for the patient to permit the physician to fall.

What are reasonably high standards? May I say again that ideal standards would be unreasonably high to incorporate in the statute, and that reasonable refers to the standards of the community. In New England Massachusetts has the lowest statutory standards, in spite of the excellence of many individual practitioners of medicine, and the excellence of some of its medical schools. In fact, Massachusetts has the lowest statutory standards in the whole United States. To many persons, proud of the traditions of Massachusetts for enlightened legislation, the mere fact that, in this respect Massachusetts has the lowest standards would be sufficient reason for raising them to at least the level of the general average. Can there be any question that the standards should be raised at least to the general level prevailing throughout the United States, prevailing even in those parts of the country which we are sometimes accustomed to look upon as backward in protecting the health of their citizens?

The recommendation of the Board is that Massachusetts should adopt the requirement that has been adopted and found to be satisfactory in every other jurisdiction in the United States, and in fact has been adopted in Massachusetts for every other Board in the Division of Registration, whose registrants have to do with the bodies of living persons, namely, to give to the Board of Registration in Medicine discretionary power of approval of schools from which it accepts candidates for examination.

The first question that naturally arises is, why should medical schools need approval? Or to put it the other way, why should not every medical school be approved? The answer is that some medical schools are doing a very poor job in providing medical education. I shall show first why this is so, and, secondly, in what respects it is so.

The question may be asked, if some schools are doing such a poor job, why not let natural competition do its work? For students will not go to poor schools and thus the schools may disappear for lack of students. The answer lies in what the State is doing for these poor schools.

In general, there are two and only two statutory requirements in Massachusetts if a medical school is to be able to send its graduates up for examination by the Board. It must be legally chartered and it must be empowered to

Presented before the Committee on Public Health of the Massachusetts State Legislature April 3 1934

Rushmore Stephen—Secretary Massachusetts State Board of Registration in Medicine. For record and address of author see This Week's Issue page 817

confer degrees These requirements are distinct and definite, and it can be determined easily whether an institution does or does not fulfill them The state, in requiring the degree in medicine, has put a commercial value on the degree, and by refraining from any other requirement for the school, has left it free to do anything it sees fit in the way of giving a medical education There are no limits to the degradation of medical education that the school may choose for itself To be sure there are no upper limits set by the state beyond which a school may not go, but no one can make money giving an excellent medical education and it is possible to make money by giving a degraded medical education The state should interfere to prevent the degradation of the power which the state has conferred and the Board recommends that it should employ the procedure used by nearly every other jurisdiction for this purpose

In this discussion it will be convenient to use the classification of medical schools employed generally by state boards of registration in medicine, namely, some schools are approved and the others are not-approved

The records of the graduates of the not-approved schools indicate that these schools are not doing a very good job, and it is partly on the record of the graduates that the schools are not approved These graduates of the not-approved schools which are in Massachusetts are not admitted to examination for licensure in any jurisdiction in the United States except in Massachusetts The reasons for this are best known to the administrative boards of these jurisdictions, but I venture to suggest that if they all agree, there is probably some good reason for the agreement So Massachusetts stands alone, as opposed to all the other states, in its policies regarding standards of medical education

Justice Oliver Wendell Holmes, a distinguished son of Massachusetts, has said, "If I am in a minority of one, they send for a doctor or lock me up, and I am so far able to transcend the to me convincing testimony of my senses or my reason as to recognize that if I am alone, probably something is wrong with my works"

In the examination before the Board of Registration in Medicine in Massachusetts, the records of the graduates of the not-approved schools are clear, and I would refer only to the Report of the Board for 1932 There in table IV, one not-approved school shows a total of 75 per cent rejections, a second 65 per cent rejections, another 92.5 per cent rejections, 96 per cent, 80 per cent, 100 per cent rejections In the tabulation of rejected candidates (table V) one candidate from an approved American school was rejected twice, but registered on the third examination, and one candidate from a foreign school was rejected three times but registered on the fourth examination No other candidates from approved schools failed more

than once But from not-approved schools there were candidates examined 14, 19, 13, 11, 17, 11 and 17 times respectively and not yet registered Does any one think that these candidates bought reasonably good medical education?

Last year I called your attention to the number of complaints against physicians that had been made to the Board There were relatively five times as many against graduates of not-approved schools as against graduates of approved schools In the days of the "noble experiment", permits to prescribe alcohol medicinally were revoked in relatively five times as many cases of graduates of not-approved as of approved schools Surely there must be something wrong with the method of selection and the training given in the not-approved schools

It is not to be understood, of course, that the Board claims that every graduate of an approved school is qualified for practice The records of the Board and the records of the graduates in practice show that this is not so But the records of the Board and the records of the graduates in practice show also that there is an unreasonably high percentage of unqualified practitioners among the graduates of the not-approved schools It is because the not-approved schools, are, judging by the results, taking no proper steps to remedy this condition, that the Board asks the legislature to take action

I have here the catalogues of some of the not-approved schools, and I am going to let them speak for themselves, for I would like to have you realize, if possible, just what these schools are actually doing I shall not give complete descriptions of these schools but I can assure you that whatever I say of the schools is based on what I find in the catalogues, I do not guarantee that they speak the truth

I have written to the not-approved schools for their latest catalogues, but not all of the schools have replied, so that if I quote from catalogues which are not the latest you will understand why I do so I may say that mere writing for a catalogue does not ensure securing one Some months ago, I received a letter from an organization interested in suppressing improper advertising, asking if I found any improper advertising in the latest catalogue of one of these schools As the letter was not accompanied by a copy of the catalogue I requested one from the school but received no reply Later I wrote again, by registered mail, requesting a return receipt card In due season a letter came expressing regret that the school could not send me a catalogue, the supply was exhausted, and for reasons of economy it was doubtful whether more would be printed

I shall mention no school by name, because I desire to emphasize the principle of approval, and to indicate what is done by schools which are not controlled by discretionary approval of an authoritative body outside of themselves

One of the claims made for these schools is that they give an opportunity for the poor boy to study medicine. In most cases it is impossible to remove the handicap of poverty, but the burden can be lightened by intelligent effort. What effort is made in this direction by the not-approved schools?

One of these schools claims that it specializes in poor but worthy students. Let us see how it specializes. The thing that the poor but worthy student needs above all other things that he does not have is money—financial assistance. This school which specializes in poor students says that it can do little financially for them, and then to quote its own words exactly "perhaps it is better it cannot help in this way." Reading further, one finds no evidence that financially it does anything at all, although it acknowledges that it can do "little", and all that it actually does in any way, beyond talk about it, is as follows: "Students may stay out a year or more, and if deserving, will always find their places reserved for them." How difficult or easy it is for the school to make this effort and reserve places for the poor students, is shown by a reference to the capacity of the school, seventy-five in each class, and to the number of students enrolled, varying from fifty-two to sixty-two in the different classes. So that there are from thirteen to twenty-three vacancies in each class, which the school reserves by great effort, perhaps, as there is no demand for them.

There is one approved school of medicine which some of its friends speak of as one of the great medical schools of the United States, even of the world, which makes no pretense to specialize in poor boys. I am credibly informed that this school has about forty thousand dollars a year available for needy students in the form of loan funds or scholarships. The cost of tuition in the two not approved schools is three hundred and sixty dollars a year, and four hundred dollars a year in the approved schools. It would seem that if a school really specialized in poor students it ought to do something financially for them.

Then there is a not-approved school which says that "it recognizes the 'Mark Hopkins' element (in education) and its importance." It is hardly necessary to remind a Massachusetts audience of what this means, that Mark Hopkins was the eminent president of a small but distinguished Massachusetts college and that a president of the United States, James A. Garfield was drawn "irresistibly" to Williams College by a letter from President Hopkins. President Garfield said that his idea of a university was sitting on a log with Mark Hopkins. American education has been enriched by this noble tradition of the influence of a great teacher, which is the "Mark Hopkins element." Let us see what this not-approved medical school has done about it, besides recognizing it.

I have checked the whole list of the trustees and the faculty of this not-approved school against the list of members of the medical society of the state in which the school is situated.

Now the State Society is a constituent member of the American Medical Association which is the alleged "medical trust", described by some of the not-approved schools as trying to suppress them. So that even in the face of the alleged opposition by the "trust" I find that 28 out of 91 members of the faculty are actually members of the "trust."

Let us see how the trustees and faculty fare in some other lists with which not even these schools allege the trust has anything to do. There is first the list of members of the American College of Surgeons with a total membership of about ten thousand in the United States and over seven hundred in the state in which this school is situated. I find no name in this list of surgeons, and I would remind you that membership in the American College of Surgeons is not limited to graduates of schools which may be approved by the Regents of the College. Graduates of any medical school, if showing qualifications of achievement may become eligible.

Then I have checked the list of trustees and faculty against the directory of American Men of Science containing the names of over twenty-two thousand men and women in the United States who have attained distinction in science, research and education. Though there are many doctors of medicine found in this directory, there is no one from the faculty or trustees of this school.

I have checked this list finally against "Who's Who in America," which needs no description by me. Again I find no name from the list, so that while this school recognizes the "Mark Hopkins element" which goes beyond the medical profession, the "Mark Hopkins element", so far as I can determine does not recognize this school.

In one of the catalogues is the statement that the school is the only eclectic medical school in the United States. This statement is not true and was not true when the catalogue was published, but an egotistical error of the sort is easily forgiven. Elijah the Tishbite thought he was the only prophet in Israel, but he was gently but firmly reminded that there were seven thousand others. I find that this eclectic school devotes some space to a discussion of eclecticism. Now if one writes the word eclecticism with a small *e*, then every scientific physician is an eclectic, for it is his duty and his pride to use whatever means he can find from whatever source to help his patient. If one writes it with a capital *E*, then Eclecticism refers to a narrow sectarian school which is generally regarded as having outlived its usefulness. In spite of the fact that there is no evi-

dence in the outline of the course of studies in this school as given in the catalogue that the students are trained in Eclecticism, I find that they have been grounded so thoroughly in the principle of choosing what they think is best for their patients and themselves that when they were asked at the time of their application for examination before the Board what school of practice they plan to follow, of one hundred candidates, fifty-four or more than half chose the regular school of practice, twenty-one chose the Eclectic school of practice, twenty chose both regular and Eclectic, one chose Homeopathic and Eclectic, and four were apparently unable to make any choice at all

One finds here and there suggestions of intentional misrepresentation. For example, it is stated somewhere that although the students are admitted to advanced standing, that is at other points in the four year course than at the beginning, "it is understood", that because of the full enrollment there are comparatively few such students accepted. Referring to the capacity of the school and the number actually enrolled one sees that there were about twenty vacant places in each class so that one wonders who it is that understood that the enrollment was full. Certainly no one who read the catalogue was justified in any such understanding.

I would call your attention to the system of examination set forth in one of these catalogues. There are "student examinations" given every month. There are "faculty examinations" usually covering longer periods of instruction than the student examination. "These examination books may not be returned to the students". Then there are the "Trustee examinations" the books of which are graded by four persons "usually not connected with the college". By this system, you can see that control of the student is taken away from the faculty and transferred to four persons "usually not connected with the college", who may be controlled by the administration, perhaps one person. It is the set-up for a dictatorship.

Then I find in one of the catalogues the statement that although this school is not subject to the Council on Education of the American Medical Association and is not a member of the Association of American Medical Colleges, its admission requirements are equal to the requirements of either of these two organizations. The only thing to be said about this statement is that it is not true.

There are some amusing statements to be found in this rather dreary reading of the catalogues. For example, "In the interest of economy, this catalogue does not publish the usual uninteresting, encyclopedic and redundant descriptions of courses of study, prefaced with long lists of professors. These courses are practically the same in all medical schools including" the school making this statement and "Anyone de-

siring such a description should consult any one of the usual conventional catalogues". Gilbert and Sullivan hardly did anything better than that.

One of the schools advertises what is in substance the set-up of a diploma mill. Of course, the old-fashioned diploma mill, which sold its diploma after no course of study was pursued by the candidate, is gone. But this school to which I am referring admits "to advanced standing", this does not mean postgraduate work, physicians registered in the state in which the school is situated. Then we find that one of the conditions for receiving the degree of doctor of medicine is a hospital internship or *its equivalent in practice*. Translated into plain English this means that an osteopath, if he is registered to practice medicine in the state in which this school is situated, may be admitted to advanced standing, and after fulfilling requirements that are very vague, may go back to his office and practice medicine, and in due time receive a diploma indicating that the degree of doctor of medicine has been conferred upon him. The catalogue says nothing definite of the cost to the candidate of the permission to practice while enrolled in the school or of the cost of enrollment in the school while practicing medicine but undoubtedly this is arranged through the usual channels. Now I have no evidence that diplomas are actually sold in this way. I am simply pointing out to you that this school publicly advertises the set-up of a diploma mill for the benefit of osteopaths, who are already registered by the Board. Since the candidate is duly registered, his license to practice is not involved by receiving later the degree of doctor of medicine in this way. In the days of the "noble experiment", if a man was found to have a still in his cellar he was condemned. I do not say that was just, but I am pointing out to you that a medical school advertises publicly that it has a diploma mill in its cellar which it can use.

What has the graduate of one of these not-approved schools received in return for the money he has paid, and how much money has he paid? The tuition fees vary, but one school to which I have already referred has a fee of \$360.00 a year. A graduate from this school has then bought for \$360.00 eligibility to examination in one state only, and a chance of passing that examination within the first year which is about fifty-fifty. For forty dollars a year more, or \$400.00, he could have bought in Massachusetts, at any one of three approved schools, eligibility, after a year's internship, to take the examination in any jurisdiction in the United States, and a practical certainty of passing that examination within one year. But that is not all. The graduate of a not-approved school, even if registered in Massachusetts, would find himself handicapped in getting a position in a good hospital, in getting work with

insurance companies, in getting protective insurance as a physician, in getting admission to medical societies. The graduates of these schools know these things perfectly well and that is why some of them, having had the bitter experience of this handicap for years desire that the schools from which they received their degrees become approved schools as it would so greatly improve their own standing in the community. I trust that some of these physicians will have the courage to tell you publicly what they have told me privately.

It has been said that these not-approved schools are meeting a demand and filling a need. I have already referred to the demand by the poor boy and I need say nothing further on that point, but there is another demand, namely, for more places in medical schools for persons who want to study medicine. But for just what is this demand? Is there any great demand for medical education in a not-approved school? Every not-approved school could admit more students than it now has, if more candidates applied. There is no not-approved school that selects its entering class from over a thousand candidates, and yet a number of the approved schools do just that. Last year there were 16,000 applicants for medical schools in the United States. Only 6,200 were admitted. There is not a single not-approved school that could not fill its class rooms to overflowing if only it became an approved school, yet thus they all refuse to do. Why, they perhaps will tell you.

What does this discretionary power of approval by the Board actually mean? Apparently it means very different things to different people. I have been reading of late some of the things written by persons opposed to the conferring on the Board of such discretionary power and they give a picture of a situation so different from the facts as I see them that I would like to take a moment to discuss this point.

For example, from what I have been reading I get the picture of a powerful Medical Trust which has, by various means on the whole rather underhanded, gained control of all the medical schools of the country except the not-approved schools. These they say, in a high spirit of independence refuse to be bound by the chains of the Trust. Furthermore, none of the approved schools is able to do anything except what the Trust permits, it is, so to speak, bound hand and foot. Does it sound reasonable that great universities some of them wealthy and powerful institutions, should have to do what the American Medical Association says? I remind you that this Association is called the Medical Trust.

The facts are in the first place, that the only thing that the American Medical Association can do to a school of which it does not approve, is to say that it does not approve, the expression now used by the Association is to say that

it does not recognize the institution. In the second place, these dreadful requirements that the Association makes are simply that the school shall not fall below certain generally recognized minimum requirements for a good medical education. It does not say a school shall not grow as high as it desires, nor as wide as it desires, but it says the school may not go down, may not degrade medical education. Each school determines for itself how excellent a school it may become within the limits of its resources but it cannot degrade medical education and be approved.

There are approved medical schools which, seeking to do the best they know how and to give as good as possible a preparation for the practice of medicine might be ashamed of themselves if they could do no better than attain the minimum requirements of the American Medical Association. The minimum requirements are to prevent dangerous degradation and to protect the public and for no other purpose.

What is the Board trying to accomplish by this proposed change in the statute? There has been much misrepresentation. Notwithstanding statements to the contrary, the Board is not trying to revoke the charter of any medical school, nor trying to have it revoked. The Board is not trying to close any medical school nor have it closed. There may be too many or too few medical schools in this country, or in Massachusetts. That is a question outside of the province of the Board. But if there were a thousand medical schools in this country, and if they degraded medical education beyond any point reached in the past or in the present, it would be a matter of comparative indifference to this Board if it had the power to perform adequately that function for which it was created, namely to protect the people of this Commonwealth against unqualified practitioners of medicine.

What is a qualified practitioner? The qualifications for the practice of medicine are four: morals, manners, knowledge and skill. On all of these points the candidate should be tested and yet on some of these points the candidate cannot be tested directly by the Board. How can the Board test morals? It must be satisfied with statements by other people and you can understand of how little value some of these statements may be. How can the Board test manners? Manners can be tested only when the candidate is actually practicing, is dealing with patients, when he is in action, so to speak. Only then can it be seen whether he is actuated by proper motives and shows proper consideration for the ill persons who entrust themselves to his care. Here also the Board cannot make any satisfactory test.

Knowledge it can and does test, but so vast is the field now covered by medicine that this test can be made only by samplings from some of the so-called major subjects.

Skill, the Board cannot test, as it is not possible under the present conditions for the Board to give a comprehensive practical examination

Nevertheless these qualifications can be tested and a system has been devised which is in active operation in many places and has been found to be reasonably satisfactory. It is an educational system, employed thoroughly in connection with some medical schools, and in part by nearly all of the others. There is the requirement of at least two years of preparation for the study of medicine in an approved college, then four years of study of medicine in an approved medical school, finally, at least one year of internship in an approved hospital. The critical point in the whole system is the raising of the question: Is this candidate qualified as to morals, manners, knowledge and skill to carry the responsibilities of a physician? If this question is raised again and again by the teachers throughout the course and is answered with intelligence and sincerity and honesty, then the Board may be justified in accepting testimony about those qualifications which it cannot test for itself.

But the point here is that not all medical schools are doing this testing thoroughly, and so if the Board is to accept the judgment of the school for any part of the testing, it should have discretion as to the school whose judgment it is to accept, that is to say, as to the school of which it does approve. This does not mean that the Board would give up at all its own responsibility or its own tests, it means that the

Board would be able to take advantage of the facilities of the school as it cannot do now.

I wish I might take the time to point out to you some of the changes which have taken place in medicine, in the past fifty years, what progress has been made in the acquiring of knowledge which must precede the application of knowledge in the relief of pain, in the prevention of disease, in curing disease, in prolonging life and in almost innumerable ways extending man's control over disease. Yellow fever has almost disappeared. We are protected from roads by the plague, cholera, smallpox which, until recently, took such a dreadful toll in death. Tuberculosis is diminishing. Even cancer now shows yearly an increasing number of cures. Surgery has become almost new, such marvelous progress has been made.

The qualified physician is one whose mind is flexible, adaptable enough to advance with the progress of his art. It requires knowledge, it requires training, it requires severe discipline to produce the skill even to find out what progress has been made. A man can keep abreast of the times in a small field only. But the qualified physician is one who knows how to make available to his patient what the science and the art of medicine are providing for the cure or amelioration of his illness and in many fields preventive medicine assures the individual and the community of freedom from the devastating effect of many diseases. All of these applications of medicine require well trained doctors who have recognized standing with their fellows.

SALYRGAN ITS LONG-CONTINUED USE IN CARDIAC INSUFFICIENCY WITH LATENT EDEMA

BY IRA M. DIXSON, M.D.*

THE bulk of the literature on the mercurial diuretics is to be found in the foreign journals, principally German. A number of articles have been written about salyrgan dealing with its chemistry, its behavior in the body and the mode of its action. Salyrgan directly affects the kidney and seems to produce diuresis primarily by depressing the cells of the tubular epithelium thereby hampering diffusion or reabsorption while filtration is little, if at all, affected. On the clinical side the indications for its use and application have been well studied and reported. Its toxic effects have been stressed from time to time. These are rare and seem to consist of mild renal, gastro-intestinal and skin irritations, although sudden death from salyrgan has been reported.^{1, 2}

A search of the literature through June, 1933, reveals that reassuring case reports of its long-

continued use are not numerous. In 1924 Bernheim³ reported a patient who had been treated for five months without irritative symptoms. Valette⁴ (1927) reported the use of novasurol for one year in a patient. Agnew⁵ (1928) reported a favorable result in a patient with portal cirrhosis who received 2 cc of the drug every other day for nine months. In 1932 Wiseman⁶ published a case report of an obese woman handicapped by decompensated hypertensive cardiovascular disease who, in 1925, at the age of 58, began receiving injections of novasurol and later salyrgan and progressed to a total of 270 injections before death supervened five years later. The diuretic response was gratifying throughout, with no harmful results on the kidney or other organs.

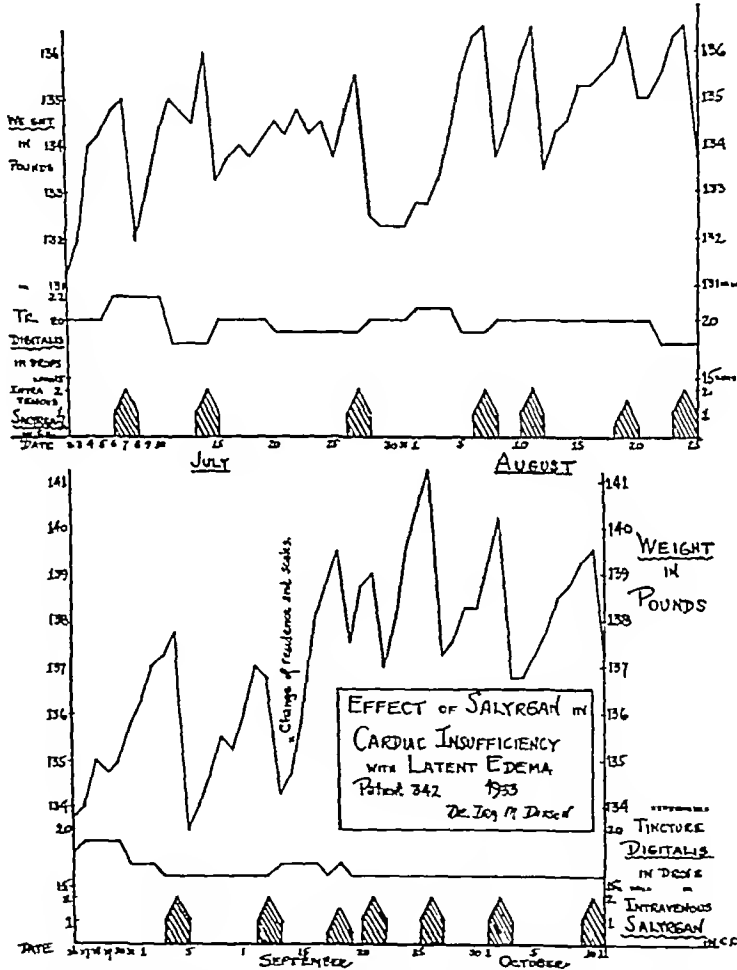
It is deemed of interest to bring to the attention of practitioners the following case report of a man who has received well in excess of 150 injections of salyrgan, intravenously, continu-

*Dixson, Ira M.—For record and address of author see "This Week's Issue" page 817.

ously for more than the past year and a half. It may be that salyrgan has preserved his delicate balance between compensation and decompensation and has enabled him to lead a reasonably useful and happy life meanwhile.

This is the story of a man in his seventy-third year who has lived a singularly vivid and useful life. For the past several years he has been under the care of Dr. Herman O. Mosenthal of New York, to whom I am indebted for the details of his past history and the privilege of publishing this case report.

testinal tract were carried out and found to be negative. The pains were relieved by nitroglycerine and the conclusion was reached that they were due to pathology in the coronary arteries. In September, 1930 upon his return from a European trip, he complained of severe pains in his knees, shoulders and neck. A week or two later he was forced to bed because of fever and marked lassitude. The fever continued for several months and no definite conclusion as to its cause was ever reached despite thorough study. The only occurrence outside of the general malaise and fever was a left facial paralysis which came on very suddenly and disappeared in



The patient first came under observation in October of 1923. At that time he was found to be of approximately normal weight, with slight thickening of the peripheral arteries, blood pressure 176/88, a systolic murmur over the whole precordium and a faint diastolic murmur over the sternum. The lungs showed no emphysema. Routine laboratory studies were essentially normal. It was concluded that this was an instance of aortic insufficiency on an arteriosclerotic basis and that the heart was compensating perfectly. In July, 1929, he became suddenly blind in his right eye due to an occlusion of the right central retinal artery. Both before and after this at rare intervals there were attacks of paroxysmal dyspnea and also in 1929 he began to experience occasional epigastric pains. These became severe in November 1929. X-ray studies of the gastro-

intestinal tract were carried out and found to be negative. The pains were relieved by nitroglycerine and the conclusion was reached that they were due to pathology in the coronary arteries. In September, 1930 upon his return from a European trip, he complained of severe pains in his knees, shoulders and neck. A week or two later he was forced to bed because of fever and marked lassitude. The fever continued for several months and no definite conclusion as to its cause was ever reached despite thorough study. The only occurrence outside of the general malaise and fever was a left facial paralysis which came on very suddenly and disappeared in the course of a few weeks. The only residue of the malady was the development of rather severe angina pectoris which was made distinctly worse by nervous tension and excitement. In April 1932 there was an attack of coronary thrombosis associated with marked cardiac insufficiency from which the recovery was very slow. Parenthetically, it is of interest that since this attack, the angina pectoris has practically disappeared. It was during his convalescence from this coronary episode that salyrgan was first used. For an interval during the summer of 1932 while traveling, its use was omitted and there soon resulted an alarming state of decompensation. Otherwise its use has been continuous. The accompanying chart graphically shows the diuretic response to salyrgan which has always been satisfactory. The natural gain in weight of a few pounds

was apparent clinically during the summer months. There was no gross edema at any time during the charted period.

The indication for an injection has been the occurrence of dyspnea, most distressing in the morning before breakfast. The only physical sign that correlated with this symptom was the occurrence of about two fingerbreadths of dullness at the base of the right or left chest. With the salyrgan injection, a loss of three or four pounds in weight would ensue with relief of the dyspnea and disappearance of the basal dullness.

Besides the digitals he received 15 grams of urea in 45 cc of water every morning.

An accurate record of the salyrgan injections prior to September, 1932, is not available but from September 13, 1932, to June 29, 1933, he received 63 injections, usually of 2 cc each. It is believed from a record of the number of ampules used that he has received well in excess of 150 injections in all between April, 1932, and December, 1933.

In a cardiac life that has been decidedly stormy at times, salyrgan apparently is this man's one dependable anchor to windward. The critical period of decompensation that supervened during its omission

in the summer of 1932 suggests that he could not carry on his limited activities successfully without it.

SUMMARY

This is the report of a man, now 73, handicapped by arteriosclerotic heart disease, whose compensation is maintained by the accessory use of intravenous injections of salyrgan. In the past twenty months he has received at least 150 injections with no demonstrable ill-effects.

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A NOTE ON THE HISTORY OF LEAD POISONING IN BOSTON*

BY REGINALD FITZ, M.D.†

TO my mind, part of the pleasure of pretending to be an amateur medical historian lies in the fact that one's imagination has so much scope. One can say and even believe many things which may or may not be strictly true and yet which appear incapable of contradiction. As an example of what I have in mind, take the matter of the history of Lead Poisoning. It is generally stated that the ancients knew a good deal about the dangers of lead and were familiar with the clinical manifestations of lead poisoning. Yet it was not until 1767 that Sir George Baker reported to the College of Physicians regarding the Devonshire Colic, and proved that the belly-ache which afflicted the cider drinkers of the South of England was due to contamination of their brew with lead. This report from the time it was read caused great discussion and therefore is properly regarded as an important addition to medical knowledge. Sir George's paper still is most interesting and convincing and I feel sure that the majority of doctors would agree with Dr. Ralph Major and list it as one of the classic descriptions of disease.

I have no desire to belittle Sir George Baker's keenness of observation. But, as a New Englander and a citizen of Boston, I resent it a little that we in Boston have not received so much credit as we deserve for our early efforts to avoid lead poisoning, certainly we were familiar with the dry colic and its cause, and enacted a law to prevent lead poisoning before Sir George

Baker was old enough to be out of swaddling clothes.

My interest in the matter arose in the following way. A friend of the Library of the Harvard Medical School gave the Library just before Christmas a copy of Baker's "An Inquiry Concerning the Cause of the Endemic Colic of Devonshire." I had never seen the paper before and read it with considerable relish. One part of it particularly interested me. Toward the middle of the paper Sir George says "Dr. Franklyn of Philadelphia informs me, that, at Boston, about forty years ago, leaden worms were used for the distillation of rum. In consequence thereof, such violent disorders were complained of by the drinkers of new rum, that the government found it expedient to enact a law, forbidding the use of any worms, except such only as were made of pure block tin. This law having been enacted, the dry colic was much less frequently heard of than before."

Now Benjamin Franklin was born in 1706, and Baker's contribution was read in 1767. So the law that Franklin remembered must have been passed before 1730, he could not have been very old at the time. Why did the law make such an impression on him that he remembered it all these years? Who in Boston at that early date was a sufficiently keen clinician to recognize lead poisoning and to write a law to prevent it?

One can easily believe that there was a good deal of lead colic around Boston at the beginning of the eighteenth century. Three bits of evidence support this belief.

There is another frequently quoted letter of

*Presented as a short play before the Harvard Medical Society January 30 1934.

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Franklin's on the subject of lead poisoning which, so far as I know, first received publicity in 1788 when John Hunter published it in a book called "Observations on the Diseases of the Army in Jamaica." It was written to a Mr Vaughan and begins as follows

"Philadelphia July 31, 1786"

"Dear Friend,

"I recollect that when I had the great pleasure of seeing you at Southampton, now a twelvemonth since, we had some conversation on the bad effects of lead taken inwardly and that at your request I promised to send you in writing a particular account

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XII *An Inquiry concerning the Cause of the Epidemical Colic of Devonshire.* By George Baker, M.D. Fellow of the College of Physicians, and of the Royal Society and Physician to Her Majesty's Household

Printed by A. COLLEGE, Juny 5 1786

A VERY small acquaintance with the writings of physicians is sufficient to convince us, that much labour and ingenuity has been most unprofitably bestowed on the investigation of remote and obscure causes, while those, which are immediate and obvious, and which must necessarily be admitted, as soon as discovered, have been too frequently overlooked and disregarded. Such a spirit of refinement in theory has in several instances, been the



FIGURE 1 First page of Sir George Baker's paper proving that the Devonshire Colic was caused by lead in the cider

of several facts I then mentioned to you of which you thought some good use might be made. I now sit down to fulfil this promise

The first thing I remember of this kind, was a general discourse in Boston when I was a boy, of a complaint from North Carolina against New England rum that it poisoned their people giving them the dry belly-ache with a loss of the use of their limbs. The distilleries being examined on the occasion it was found that several of them used leaden still heads and worms and the physicians were of opinion that the mischief was occasioned by that

use of lead. The legislature of Massachusetts thereupon passed an act, prohibiting under penalties the use of such still heads and worms thereafter

More recently both Oliver Wendell Holmes and Samuel Abbott Green have attempted to reconstruct the early eighteenth century medical practice of New England and each mentions that cases of dry belly-ache seemed often to have been encountered by our colleagues. Green goes so far as to quote an advertisement which appeared in the *New England Courant* in December, 1722

"For the Good of the Public a certain Person hath a secret Medicine which cures the Gravel and Cholick immediately and Dry Belly Ach in a little Time and restores the Use of the limbs again' (tho of never so long continuance) and is excellent for the Gout. Enquire of Mr Samuel Gerrish Bookseller near the Brick Meeting House over against the Town House in Boston N.B. The Poor who are not able to pay for it may have it gratis

Certainly this advertisement suggests that the "Dry Belly Ach" was common enough and that the association between it and paralysis was then generally recognized the colic being more readily amenable to treatment than the palsy

Finally old Dr Holyoke in 1787 in a communication to the Massachusetts Medical Society grew reminiscent. He says that in the early days of his practice the dry belly-ache was very frequent in Salem but lately had become unusual

Admitting that colic was common in Boston before 1730, and even that the association between it and paralysis was known, yet the person who correlated these findings with the presence of lead in New England rum and enacted a law about it is still a mystery. I believe that something like the following episode took place

There graduated from Harvard College in 1687 a man by the name of John Clark. His grandfather and his father had both been doctors, so perhaps being the third in line he came by successful doctoring rather naturally. In any event this third John Clark was an able man of considerable influence in the community. He was a good preacher and a fine doctor with a large practice. There was scarcely an important funeral in Boston which Dr Clark did not attend in some capacity. Also he was a politician. He was Speaker of the House of Representatives for several years and thus was familiar with the machinery of passing laws, he was an important figure in the House and was in the habit of getting through the legislature such bills as interested him. He had a remarkable brother-in-law whom he thoroughly appreciated a man by the name of Cotton Mather. Mather was a truculent, belligerent soul, out of gear with most people, a born reformer, interested in all manner of things, thoroughly alert to everything that was going on and bristling with energy. Although a minister by profession he became involved in the attempt

to prevent by inoculation the ravages of smallpox in Massachusetts and thus came into intimate contact with Zabdiel Boylston one of the most far-seeing, progressive doctors in our history. These three men, undoubtedly, formed a strong triumvirate.

I can imagine them dining together at their favorite Tavern one day in the early winter of 1723. The fare was simple no doubt, but the conversation serious and interesting. Cotton Mather began it by saying what a pity it was that there was so much drinking nowadays, he had been shocked to discover that in Connecticut there had been excessive drinking among clergymen, even, and he thought such practices ought to be stopped. John Clark, keeping the ball of conversation in play, then remarked that he too was impressed with the apparent ill-effects of alcohol among his patients. It seemed to him, especially among the poor people who drank a good deal of new rum, that he was seeing an undue amount of dry belly-ache and that this often was followed by a peculiar muscular weakness, especially characterized by wrist-drop. He had begun to wonder whether these afflictions were not something more than a just dispensation of Heaven against the intemperate and to think that perhaps the rum which these people drank so freely contained a noxious element. This statement seemed to stir up Boylston. For Boylston said that just lately a young chap called Ben Franklin, the brother of that rascal Jim Franklin, the newspaper man, who was so bitter against inoculation, had paid a call on him Jim, quite properly, had just been put in prison as everyone knew, for expressing certain radical views in his paper, the *New England Courant*. Ben* had decided to keep up the journal until his brother got out of prison and had made himself editor-in-chief and printer. He had determined to be a little circumspect regarding the sort of news he put forth because he had no desire to go to jail also. But the other day a rather startling rumor from North Carolina had come to his ears to the effect that the New England rum which was sold there was poisonous and was giving the people who drank it the dry belly-ache with a loss of the use of their limbs. Should he publish this rumor as an interesting item of news or would it be better policy to keep it dark?

Dr Boylston went on to say that Ben Franklin, unlike his brother, appeared to be a decent young chap with a good deal of common sense. He had gone to some distilleries to see how rum was made. He found that rum was commonly distilled through leaden pipes into appropriate

containers. These looked all right, certainly the rum looked all right, too, smelt all right, and tasted fine. But Franklin wondered whether there could be anything in the lead pipes that was harmful.

Dr Boylston said that at first he was disinclined to take very seriously what Ben Franklin had said. But now he was beginning to wonder. It so happened that within the twelve-month there had come to his attention a most interesting book. Medical books that came from the old country were few and far between, but



FIGURE 3 The title page of the 1716 Edition of the Collected Works of Bernardino Ramazzini, the first doctor interested in Industrial Hygiene.

one of his English friends had sent him a copy of a brand new one, the collected works of a Doctor Ramazzini, a professor of medicine in the University of Padua.

Ramazzini had certain ideas in relation to medicine that were altogether revolutionary. One of them was that certain trades were injurious to health, and he had classified the various illnesses to which workers in the different trades were liable. Apropos of what the Reverend Mather, Dr Clark and young Franklin had been saying, Ramazzini's ideas on the type of sickness acquired by workers exposed to lead, like potters and painters, seemed most striking. Then Dr Boylston fetched his copy of this new book and, translating freely from the Latin, read to John Clark and Cotton Mather the following quotations:

*The first copy of the *New England Courant* edited and printed by Benjamin Franklin was published February 11 1723. It begins: "The late Publisher of this Paper finding so many Inconveniences would arise by his carrying the Manuscripts and publick News to be supervised by the Secretary as to render his carrying it on unprofitable has intirely dropt the Undertaking. The present Publisher having receiv'd the following Piece, desires the Readers to accept of it as a Preface to what they may hereafter meet with in this Paper."

"OF THE DISEASES OF POTTERS"

"The potters use hot calcinated lead for glazing, grinding the lead in marble vases with a smooth piece of wood suspended from the ceiling of their workshop and fitted with a square stone at the other end. They then line the vases with molten lead, using brushes for this process before they put them into the furnace to bake. During this time any poison which the lead contains in a liquid state is taken in by the potters to their mouth and nostrils and the whole body. In a short time they begin to feel seriously ill. First they find that their hands are trembling and soon they become paralysed, splenetic, lethargic, consumptive and toothless; hence one rarely sees a potter whose face is not ghastly and leaden."

OF THE DISEASES OF PAINTERS

"Painters are also subject to various diseases such as trembling of the limbs, consumption, blackening

stomach and both the hypochondria, that neither clusters, fomentations, baths nor any sort of remedy gave him ease. The only relief he had in the violence of the fits was to have three or four men leaning with all their weight upon his belly, the compression of which lessened the torment."

John Clark and Cotton Mather were as much struck by these paragraphs as was Dr. Boylston. After due consideration and discussion they agreed that without doubt it seemed highly probable from these observations that lead, even in small quantities, might be very harmful if introduced over a long interval of time into the body. Finally, Cotton Mather, as a notorious reformer, glad to reform anything in sight, turned to John Clark and suggested how salutary it might be particularly as it would make distilling more difficult and therefore less popular, for Massachusetts to be guided by Professor Ramazzini's belief to issue a warning that lead was poisonous, and to have a law enacted which should prevent hereafter the use of lead pipes in the manufacture of rum. Boylston and Clark acquiesced. And so it happened that a law dealing with the regulation of the distillation of rum was proposed by Dr. John Clark and was passed and published on September 3, 1723. The law begins as follows:

"An Act for Preventing Abuses in Distilling of Rum and Other Strong Liquors With Leaden Heads or Pipes

Whereas the strong liquors and spirits that are distilled through leaden pipes are judged on good grounds to be unwholesome and hurtful notwith

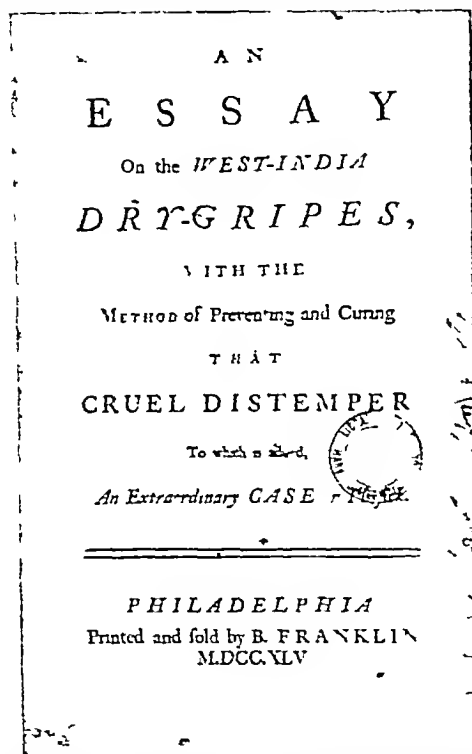


FIGURE 3. Title page of Thomas Cadwalader's essay on The West India Dry-Gripes. This essay contains a good clinical description of Lead Colic as it occurred among drinkers whose rum was impregnated with lead.

of the teeth, pallor of the face, melancholy, loss of the sense of smell. The principal cause of their sickness is the material of their colors which they have in their hands continually and under their nostrils such things as red lead, cinnabar, white lead, varnish, nut oil and linseed oil which they use to temper their colors and several other paints made of various minerals. Besides when the painters are about their work they generally wear dirty and stained clothes so they can not avoid taking in offensive exhalations at their mouth and nostrils. Fernelius mentions the curious case of a painter of Angers who was taken first of all with trembling in his hands and fingers. He soon had a convulsion and then his whole arm was attacked by the same disease. This went then into his feet, and finally he was taken with such violent pain in his



FIGURE 4. The Boylston Medical Library Book-Plate. This library is the chief foundation on which the present Harvard Medical School Library rests.

standing which some persons to save charge may be led into the making or using of such heads, worms or pipes for remedy and prevention whereof—

"Be it enacted by the Lieutenant Governor Council and Representatives in General Court assembled, and by the authority of the same

"No leaden heads or worms to be used in distilling, upon penalty

(Sect. 1) That no person whatsoever shall make use of any such leaden heads or worms, for the future, and that whosoever shall presume to distill, or draw off any spirits or strong liquors thro' such leaden heads or worms, upon legal conviction thereof before any of his majestie's courts of record, shall forfeit and pay a fine of one hundred pounds

"And be it further enacted by the authority aforesaid,

No braziers, &c, to make worms or heads of base pewter or lead
Penalty

(Sect. 2) That no brazier, pewterer or other artificer whatsoever, shall presume to make any worm or head, for distilling, of coarse and base pewter, or such as hath any mixture of lead in it, under the penalty of one hundred pounds"

My tale is not as altogether fanciful as it may sound. Lead colic in those days, after all, was typical and fairly easy to recognize. The nearest approach to a contemporaneous account of it as occurring among the rum drinkers of Boston is that given in 1745, by Thomas Cadwalader of Trenton.

In that year he wrote and had published by Benjamin Franklin "An Essay on the West-India Dry-Gripes with the Method of Preventing and Curing that Cruel Distemper" and described several cases which he had encountered. In the West Indies it was the habit to distil rum through leaden pipes so presumably Cadwalader's cases were much like those in Boston. The disease was attended with excessive griping pain in the pit of the stomach and bowels, "a Sensation as if the Bowels were drawn together by Ropes". There was likely to be some nausea and vomiting. Obstinate con-

stipation was the rule. A palsy was likely to ensue when the patients would "lose the Use of their limbs, the ancles and Wrists becoming exceeding weak and the Balls of the Thumbs sinking". Occasional cases were met with which developed violent convulsions. John Clark and Zabdiel Boylston, certainly, were sufficiently practised clinicians to recognize when they encountered so striking a train of events.

There is no doubt but that the law which I have quoted was passed. There is no doubt but that John Clark had a hand in its passage. From the wording of the law one can reasonably conclude that the clinical manifestations and cause of lead colic were recognized by the doctors of Boston in 1723, many years ahead of the rest of the medical world. The passage of so sensible a law pertaining to Industrial Hygiene and Public Health at so early a date in our history is another pioneer medical accomplishment of our fathers, in which Bostonians may well take a justifiable pride.

Whether Cotton Mather, Zabdiel Boylston and Benjamin Franklin had anything to do with the affair is less certain. All I am sure of is what Franklin has written, that the copy of the edition of Ramazzini to which I have referred was published in 1716, and that it wears the book-plate of the Boylston Medical Library.

This library was established in Harvard College in 1802, by Ward Nicholas Boylston, a grand-nephew of Zabdiel. It is said to have been founded as a special tribute to the elder Boylston by the younger. I cannot trace the history of this particular volume. Perhaps this book may have been the nucleus of the Boylston Medical Library, may once have been owned by Zabdiel Boylston, have been studied by him, and used by him as I have suggested. Anyway, as I turn over its pages, I like to pretend that this is so.

VERMONT STATE MEDICAL SOCIETY

SYMPOSIUM

INTRACRANIAL LESIONS*

BY GILBERT HORRAX, M.D.†

Mr President, Ladies and Gentlemen

IN casting about for a subject upon which I might address you for half an hour, it was obvious that I could merely dwell on a few of the high points concerned with recent advances in the field of intracranial surgery. For this reason it would seem most practicable to take up the subject under the following headings:

- 1 Trigeminal neuralgia
- 2 Congenital defects
- 3 Infections
- 4 Traumatic lesions
- 5 Tumors

Just a word about trigeminal neuralgia. It is our practice to be relatively conservative in respect to this condition, because notwithstanding the fact that many patients have a chronic recurring neuralgia for which they must have eventually the so called radical operation of root

*Read before the Vermont State Medical Society at the Annual Meeting held in Barre Vermont, October 5 and 6 1933.
†Horrax Gilbert—The Lahey Clinic Boston Massachusetts.
For record and address of author see This Week's Issue page 817.

resection, nevertheless there are many milder cases which may be controlled easily and quickly, even though temporarily by simple means. In the mild early cases inhalations of trichlylene (trichlorethylene) may be given at times with distinct benefit. Twenty to twenty-five drops of this drug should be inhaled by the patient while lying down, instructions being given to inhale deeply and with the patient lying on the side. This latter precaution is necessary since at times the inhalations may induce a momentary anesthesia in which case the gauze or handkerchief will fall away from the nose and no more will be inhaled. I have never known any deleterious effects from such a momentary anesthesia. Inhalations should be kept up regularly three times a day for several weeks unless the pain becomes severe, in which case the next step in our practice would be to give an alcohol injection. Although injections do not give permanent relief, we believe they should always be given at least once before root resection is performed. There are many reasons for this. In the first place, the patient ordinarily can be given immediate and complete relief from the extreme pain from which he or she is suffering, since the injection can be done in the office. In the second place, the temporary anesthesia produced by the injection gives the patient an idea of the peculiar feeling he will have permanently after root resection. This is important, because some patients find this numbness extremely disagreeable and complain of it afterwards as being almost as bad as their old pain. Thirdly, there are many patients who are far advanced in years and although they might go through the operation perfectly well nevertheless a simple injection which often stops their pain for one or two years may see them through their lives without the added risk of operation.

When injections become difficult or impossible because of the formation of scar tissue produced by the reaction of the alcohol, we must then divide the sensory root of the nerve. We believe the standard operation by the temporal route is the procedure of choice, since the suboccipital operation being entirely intradural almost certainly carries slightly greater risk.

Having thus briefly and necessarily imperfectly spoken of the treatment of trigeminal neuralgia, I may turn for a moment to some other intracranial conditions. Of congenital anomalies, I will speak of one only, namely oxycephaly. This is a rare condition caused by premature closure of the cranial sutures. Due to this fact the growing brain can expand in only one direction which is upward in the region of the anterior fontanelle. This gives the head in such children the peaked appearance known as tower skull. In all of these patients there is definitely increased intracranial pressure as evidenced by marked convolutional atrophy and a

low grade of choked disks with gradually forming optic atrophy. In young children the procedure of choice is to remove large areas of bone from the skull without opening dura. This gives the brain a chance to expand normally while new bone is taking the place of that which has been removed. In older patients a unilateral or bilateral subtemporal decompression should be carried out in the usual way, the dura being opened widely over the temporal region.

Under infections there are two conditions which may have a surgical bearing, namely, non-meningococcal meningitis and brain abscess. Occasional cases of early meningitis have perhaps been cured by laminectomy and drainage of the subarachnoid space, but on the other hand about an equal number have gotten well after repeated lumbar punctures. Concerning brain abscess let me emphasize one or two points. Multiple metastatic abscesses, so far as I know, cannot be helped by any means. Single encapsulated abscesses, especially if they can be approached where they come close to the surface of cortex offer a very good chance of cure. Brain should be removed down to the upper pole of the abscess and the latter aspirated with as fine a needle as possible. The abscess wall should then be opened by crural incision and the four flaps thus created sewed to the subcutaneous tissues. This creates the abscess into a pouch and it will thus drain perfectly. Gutta-percha tissue is laid in the cavity and into this a piece of gauze is packed lightly merely to hold the pouch open. Dressings are then done every other day, and, as the brain around the abscess cavity expands, the abscess wall is gradually pushed outward, thus little by little extruding the drain which may be cut off from time to time. During this time brain and abscess wall will bulge out in the form of a fungus but when the drain has been extruded entirely, the fungus which has by this time granulated over, will recede by itself as epithelium covers it. It is, therefore, not necessary to do anything with such a fungus except to dress it with some smooth material like gutta-percha tissue and keep pressure from it.

Injuries Certain aspects of head injuries were dealt with by your president in his opening address and I shall therefore, confine myself to two of the complications for which one must be on the lookout under some circumstances. Extra-dural or meningeal hemorrhage as you have heard already, occurs shortly after an injury which ordinarily has caused a linear fracture in the temporal region. It is a surgical emergency and must be dealt with promptly. There is another type of slowly developing clot, however, which may not manifest itself for weeks or months after the accident, and it is almost characteristic of this condition

that the injury which causes it is relatively slight. This is the subdural hematoma, formerly called pachymeningitis hemorrhagica interna. After a free interval of a week or two up to several months, the patient usually has headaches which become increasingly severe, sometimes of agonizing severity. There may be also vague mental changes and, rarely, outspoken neurological signs together with choked disks. The differential diagnosis must be made of such a clot and the more frequent conditions of post-traumatic headaches of other origin. In most instances, this must be done by a small trephine opening over the postparietal region on either side of the median line. If a clot is present, the dura will be discolored a greenish blue and upon opening the dura the grey, connective tissue membrane which surrounds the hematoma will present. This membrane should be incised and if the clot has liquefied it may be allowed to evacuate itself so far as possible after which a small soft catheter may be introduced and the soft portion of hematoma further sucked out. If it is solid a bone flap must be turned down and the hematoma with its enclosing membrane evacuated. The mortality from these operations is relatively very low and as a rule, complete convalescence ensues.

Another, though much rarer complication of certain head injuries is the condition of intracranial aerocele. It is particularly likely to happen in extensive injuries involving the frontal and ethmoid sinuses. The patient may do very well for a time and then after sneezing or coughing, headache develops. X-rays will then show the collection of air, which is not only within the cranium but as a rule within the brain substance. In these patients there is a traumatic fistula through the dura into the brain communicating with either the frontal or ethmoid sinus. If nothing is done, the air almost inevitably ruptures into the lateral ventricle, cerebrospinal rhinorrhea is established and a fatal meningitis follows. The treatment is prompt operative intervention, in which the fractured area is reexplored, the fistulous opening sought for and closed either by suture or by placing a piece of muscle or fascia over it, thus sealing it off. The air will then gradually absorb.

Tumors. There is such a short time left to deal with this large subject that I shall confine my remarks to a few of the many groups of tumors about which we have learned a good deal during the past ten years especially.

Gliomas, as you doubtless know, constitute the largest single group, contributing some 40 per cent of all brain tumors. In adults there are two principal types, the glioblastomas and the astrocytomas. The former are the malignant, infiltrating growths and little can be done for

them unless they are fairly small and occupy a silent area of the brain such as one of the occipital or frontal lobes or the right temporal lobe. In such instances, the whole lobe may be excised with the tumor, but even then it may be found that growth has spread beyond the limits of excision, and recurrence, therefore, will take place. The astrocytomas are more slowly growing and less infiltrating. They may be solid or cystic. If solid, they must be dealt with as radically as possible, excising as much cortex around them as can be accomplished without getting into important areas. If they are largely cystic, they offer a better prognosis inasmuch as the cyst can be emptied and the solid portion of growth in the cyst wall excised. Such cases may be completely cured.

In children, there are likewise two main forms of glioma, both occurring in the cerebellum. The medulloblastomas are the malignant type, but as these tumors are highly radiosensitive the patient may often be given a period of one to two years of excellent health. The ultimate prognosis, however, is bad. The other type, as in adults, is the astrocytoma, but in children these are usually cystic growths and may often be successfully dealt with by excision of the nodule of tumor within the cyst.

Another large group of brain tumors are the meningiomas. These are the well encapsulated, solid growths occurring almost without exception in adults. Successful extirpation of these tumors usually results in complete cure, but as they, together with the overlying bone and dura are extremely vascular, the operation may be one of the most difficult that a neurosurgeon is called upon to perform. Meningiomas in the motor area frequently cause focal convulsions of the opposite side of the body, either with or without symptoms of increased intracranial pressure. Furthermore, these growths in any situation, tend to give bony changes which may be recognized by the x-ray. These changes are most often in the form of bony proliferation, sometimes seen as a localized area in the cranial vault directly over the meningioma, while at other times there may be thickening along the base at the site of attachment of tumor to dura. One particular variety causes such thickening of the posterior orbital wall as to give the patients a marked protrusion of the eye on the affected side.

The last group of tumors of which I wish to speak are those arising from the sheath of the acoustic nerve. These are the typical cerebello-pontile angle tumors. Patients harboring this type of growth present a definite train of symptoms and neurological findings which are almost pathognomonic. Their history begins with tinnitus followed by gradually increasing deafness in one ear. After an interval of months or even

years, cerebellar symptoms such as unsteadiness in walking or difficulty in the use of the hands may arise. These are often preceded by a feeling of numbness on the side of the face corresponding to the deaf ear. Finally headaches occur followed by failure of vision and in the end difficulty in talking and swallowing. Neurological examination confirms objectively the symptoms complained of and the ophthalmoscope reveals bilateral choking of the disks if pressure is far enough advanced.

Although acoustic tumors are benign, encapsulated growths, nevertheless they are difficult of access in the cerebello-pontile angle. An intracapsular enucleation is about the best that can be hoped for in most instances, but many times this is sufficient to give a period of many years' relief from symptoms.

MISCELLANY

SPECIAL MEETING

Under the combined auspices of the University of Vermont and Vermont State Medical Society a special clinical meeting will be held in Burlington Vermont, May 4 and 5. A full program will be sent in due time to each member of the State Society.

VERMONT DEPARTMENT OF PUBLIC HEALTH

FEBRUARY, 1934

The incidence of communicable diseases during the month of February is as follows: chicken pox 228, diphtheria 3, measles 238, mumps 32, poliomyelitis 1, scarlet fever 58, typhoid fever 3, undulant fever 2, tuberculosis 10 and whooping cough 155.

A total of 1228 examinations was made by the Laboratory of Hygiene in February, classified in the following manner:

Examinations for diphtheria bacilli	92
" Widal reaction of typhoid fever	30
" undulant fever	14
" gonococci in pus	95
" tubercle bacilli	170
" syphilis	438
of water chemical and bacteriological	23
" water, bacteriological	184
" milk market	88
" milk submitted for microscopical only	0
" milk, submitted for chemical only	9

Examinations of foods	2
" drugs	0
" for courts, autopsies	2
" evidence of rabies (animal heads)	0
" evidence of malaria	1
" miscellaneous	71
" for courts, miscellaneous	7
Autopsies to complete death returns	2

Twenty-four cases of gonorrhea and twenty-one cases of syphilis were reported to the Division of Venereal Diseases. Seven hundred and four Wassermann outfits and 356 gonorrheal slides were distributed during the month.

Eighty-two patients were seen during February by the Poliomyelitis After Care nurses; four doctors were consulted, five social service calls made, five plaster casts removed, three patients were admitted to the Children's Hospital and four discharged from the same hospital. One patient was admitted to the Audubon Hospital and two discharged from this hospital. Three new pieces of apparatus were fitted and 12 orthopedic corrections made to shoes. The vocational worker of this division reports sales made by the patients amounting to \$22.42.

BURLINGTON AND CHITTENDEN COUNTY CLINICAL SOCIETY

The following is the report of the Secretary of the meetings held by the Burlington and Chittenden County Clinical Society since November, 1933.

At the December 21st meeting Dr. Truax gave a very interesting paper the subject of which was 'Gentian Violet Treatment of Cutaneous Burns.' He outlined the advantages of this treatment in the more severe types and brought to the attention of the members the fact that these burns should not be covered with ointment before being sent to the hospital as it makes treatment more difficult for the attending surgeon.

Dr. F. L. Hall of Grand Isle was elected to membership.

At the meeting on February 15, Torr Wagner Harmer, M.D., Chief Surgeon, Out Patient Department, Massachusetts General Hospital, presented a paper on 'Hand Surgery,' which was divided into three sections, as follows: 1. Infections, 2. Trauma, 3. Reconstruction. This paper was ably illustrated by many lantern slides. Dr. Harmer brought to the attention of the members the fact that a thorough knowledge of the anatomy of the hand is vitally important to anyone doing this type of surgery.

Dr. Harold L. Medevitsky was elected to membership.

NEW HAMPSHIRE MEDICAL SOCIETY

ONE HUNDRED AND FORTY-THIRD ANNUAL MEETING

Preliminary Announcement

Doctor Dean Lewis, President of the American Medical Association and Professor of Surgery at the Johns Hopkins Medical School, Doctor Walter C Alvarez of the Mayo Clinic, Doctor Frank E Adair, of New York City, and Doctor S A Petroff, of Saranac, will be among the out of state guests at the annual meeting of the Society, which will be held at the Hotel Carpenter, Manchester, on May 15 and 16, 1934

All meetings will be held on Eastern Standard Time

With the President, Doctor Robert J Graves of Concord, in the Chair, the scientific sessions will open promptly at 10 o'clock (A.M.), on Tuesday, May 15 and continue with morning and afternoon sessions Tuesday and Wednesday. The afternoon sessions will begin at 2 00 o'clock. On Tuesday evening there will be an entertainment in the Assembly Room for the members of the Society and the members of the Women's Auxiliary. On Wednesday evening the usual banquet will be held with Dr James J Powers, of Manchester, acting as Anniversary Chairman

On Tuesday morning there will be reports of committees. Full details will appear in the *Journal* next month

On Tuesday afternoon, May 15, at 2 00 o'clock there will be a symposium on Pulmonary Tuberculosis. Doctor Petroff and Doctor Deming, of Glencliff, will consider the medical aspects, Doctor Richard Overholt, of Boston, will discuss the surgical aspects and Doctor A. S. Merrill, of Manchester, will describe the x ray findings

On Wednesday morning, May 16, beginning at 10 00 o'clock, Doctor William P. Murphy, of Boston, will speak on Anemia, and Doctor Dean Lewis will follow with an address to the Society. On Wednesday afternoon, beginning at 2 00 o'clock, Doctor Alvarez and Doctor Adair will be on the program. The usual number of papers with discussions will complete the programs on both days. Several of the out of state guests will be present and speak at the banquet

The first meeting of the House of Delegates will be held Monday evening, May 14, at 7 30 o'clock at the Hotel Carpenter and all subsequent meetings will be at the same place. Henry C Sanders, Jr., of Claremont, will be the Acting Speaker

The usual exhibition of surgical instruments, x ray appliances, drug specialties and books will be held in the hotel lobby

All arrangements for the meetings and exhibits are under the management of the Manchester Medical Society. Howard A. Streeter, Chairman

The Women's Auxiliary will hold its Annual Meeting during our sessions. Its members and other visiting women will be entertained by the Committee on Entertainment of Visiting Women

A detailed program will be printed in the *Journal*

next month and will be mailed to all members of the Society

ROBERT J GRAVES, *President*
CARLETON R. METCALF,
Secretary Treasurer, Pro Tem
HENRY C SANDERS, JR.,
Acting Speaker of the House
of Delegates

GOLD MEDALISTS

Gold medals will be presented to Leonard Jarvis, of Claremont, and to George E. Leete, of Concord, who have attained fifty years' membership in the Society

NEW MEMBERS

Bassow, G. W., East Jaffrey
Bennert, H. W., Goffstown
Benway, C. A., Bristol
Burroughs, T. P., Concord
Butterfield, Warren H., Concord
Crisp, N. W., Nashua
Daniels, B. P., Keene
Eades, G. R., Keene
Eastman, C. D., Monroe
Goodlett, W. C., Lisbon
Goodman, P., Nashua
Hamel, P. R., Manchester
Harrington, W. J., Manchester
Hernandez, R. A., Laconia
Jacques, Laura, Tilton
Jones, R. N., Whitefield
Kasheta, F. J., Warren
LaFrance, Phillip, Laconia
LeBlanc, J., Suncook
McDonald, W. J., North Conway
Murphy, R. L., Manchester
Nolin, Francis H., Claremont
Norris, J. L., New London
Phillips, Arthur, Potter Place
Precourt, W. E., Somersworth
Prevost, G. E., Keene
Prince, W. M., Durham
Rahmanop, W. B., Dover
Robbins, M. J., Nashua
Robinson, Norris, Keene
Sanders, James, Rye
Shields, J. D., Concord
Sikorsky, Lucy N., Claremont
Spring, J. D., Nashua
Stewart, Melba, Laconia
Thibodeau, W. D., Nashua
Wiggin, Chester M., Conway
Wozmak, C. F., East Jaffrey
Wroblewski, W. G., Nashua

RESIGNATIONS

Israeli, Clara, Philadelphia, Pa.
Macleay, A. A., Manchester
Sidis, Sarah M., Portsmouth
Woodman, A. B., Springfield, Vt.

CASE RECORDS
of the
MASSACHUSETTS GENERAL
HOSPITAL

ANTE MORTEM AND POST MORTEM RECORDS AS USED
IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES

EDITED BY RICHARD C CABOT, M.D.
F M PAINTER, A.B., ASSISTANT EDITOR

CASE 20151

PRESENTATION OF CASE

A thirty year old divorced American laundry worker entered complaining of profuse vaginal bleeding

Her menstrual periods had always been regular until nine years before entry. At that time without any known cause her periods became irregular, occurring every two to four months and lasting for several weeks or months. The amount of bleeding greatly exceeded that of her usual periods. A surgeon removed several uterine polyps at that time. For the next year she had no bleeding at all and felt much better, then the same symptoms recurred. She also complained at that time of a dull dragging feeling in the lower abdomen but no actual pain. Two years before entry she received four x-ray treatments without relief. Her condition remained about the same until six or eight weeks before entry at which time the bleeding became worse, requiring four heavy pads a day. She felt very tired and was forced to give up work. Two weeks before entry she fainted. A doctor packed her uterus. Since that time she had had two other packings. The weakness increased and was often associated with periods of dizziness. During the last two weeks before entry she had occasional nausea and vomiting, and dull lumbar backache relieved by standing up.

She had gained about forty pounds during the past five years and stated that she had felt rather apathetic and had lost interest in her surroundings, although her memory and intellect remained as before. There was no enlargement of her tongue or difficulty in speaking.

Her father, mother, three brothers and three sisters were all living and well. There was no family history of diabetes, cancer, insanity or typhoid fever.

She was married fourteen years before entry and was divorced nine years later. Her husband had tuberculosis. There were no pregnancies.

She had an appendectomy sixteen years before entry. Her catamenial history was normal. Periods began at the age of twelve and were regular until the onset of her present illness.

Physical examination showed a well devel-

oped, very obese, pasty woman, weighing approximately 190 pounds. Her hands and feet were very small. She wore a size four shoe. Most of her obesity was abdominal and thoracic. The breasts were large and pendulous. The thyroid was palpable, moderately soft and symmetrical. There was extreme tenderness over the midlumbar spine. The abdomen was large, flabby, and showed striae albicantes. There was slight tenderness in the left lower quadrant. The fundus of the uterus was palpable. There was profuse vaginal bleeding.

The temperature was 98.4°, the pulse 85. The respirations were 20.

Examination of the urine (not a catheter specimen) was negative except for occasional white blood cells. The blood showed a red cell count of 3,890,000, hemoglobin 60 per cent, and a white cell count of 14,350, with 72 per cent polymorphonuclears. Examination of the stools was negative. The clotting time was three minutes. The bleeding time was not prolonged. The basal metabolic rate was -15. The blood calcium was 10.19 milligrams per 100 cubic centimeters. The phosphorus 3.72.

X-ray examination of her skull showed a normal sella turcica. There was some increase in porosity of the bones of the skull otherwise they showed no variation from the normal.

She was given iron and ammonium citrate grains ~~xxx~~ three times a day. Five days after admission she was given ten subcutaneous doses of autophycin, one hundred units daily. During this treatment there was practically no appreciable rise in temperature although at times she felt dizzy and weak, and there was no appreciable diminution in her vaginal bleeding. She felt very weak and complained of severe left lower abdominal cramps. On the nineteenth day dilatation and curettage was done.

DIFFERENTIAL DIAGNOSIS

DR GEORGE A. LELAND, JR. It appears that this patient is a woman of thirty who for one half of her normal menstrual life has had abnormal uterine bleeding. In spite of the fact that according to the record there were no pregnancies, I do not think one can exclude the possibility that we may be dealing here with one of the abnormal bleedings incident to pregnancy. The retained placenta in an interrupted pregnancy may produce very prolonged bleeding. On the other hand one would not expect such a situation to last for nine years.

It was noted that in the early part of her history a doctor removed several uterine polyps. That, if true, is very important. It is rather unusual to make the diagnosis of multiple uterine polyps. Multiple cervical polyps are not rare and can be easily diagnosed without opening the uterus. The diagnosis of multiple uterine polyps usually requires a hysterotomy either on the operating table or on the pathologist's

table If there were multiple tumors removed by this physician one wonders if they were typical polyps or of the hydatidiform mole type. However, we will let that go by and assume that the history is correct, that there were no pregnancies and that the duration of the bleeding excluded the suspicion that it might be caused by pregnancy.

In a woman of thirty, cancer cannot be excluded. About four per cent of all cancers of the cervix occur in women of thirty years or younger. But here again the duration of the bleeding symptoms is too long to indicate that we have a cancer of the cervix. No mention is made of the cervix in the report of the physical examination. Whether it was palpated or not we do not know. Adenocarcinoma of the uterus is extremely rare but not unknown in women of this age. There again we would not suppose that adenocarcinoma would account for all the symptoms. Suppose, however, that she had had uterine polyps at one time and that they have recurred, it would not be impossible to have a later development of adenocarcinoma superimposed upon recurring uterine polyps.

A third condition to be considered is the question of thrombopenic purpura. In most cases of thrombopenic purpura however in women of this age the periods are not so irregular as they were here. In a typical case the bleeding is prolonged with each period, but the periods are regular. Then too we would expect a story of bleeding from other organs. In this case we have the blood examination showing that the bleeding time was normal. These negative findings would seem to rule out thrombopenic purpura as a possibility.

Coming to the pelvis itself, we have a history of uterine polyps. We have upon physical examination the finding that the fundus of the uterus was palpable. A uterine fundus palpable through an abdomen which was very obese would indicate definitely that the fundus must be considerably enlarged. One must not forget the possibility however that the palpable mass was not the fundus at all, but an ovarian tumor. If the story that there were polyps is true, with this finding of enlarged fundus one has the right to assume that this patient at the time of her entrance had multiple fibromyomata of the uterus, probably with recurrent polyps with, possibly, superimposed adenocarcinoma.

When we take the story as a whole and examine the physical condition critically we find that the most striking thing of all is of course the great weight of the patient. The distribution of the fat combined with the small hands and feet—(the shoe was size four, distinctly the Cinderella type)—this disproportion of the hands and feet to the fat chest, abdomen and pendulous breasts of course brings up at once the question of pituitary disturbance. We find that the basal metabolic rate has been in-

terfered with, and going farther down the abdomen we find that there is distinct evidence of pelvic pathology.

To piece these findings together, I merely recall to your mind that investigative work in recent years has indicated a very definite association between uterine polyps, fibromyomata, and cystic degeneration of the ovaries. The multiple follicular cysts which produce estrin seem to have, in a carefully worked out series, a very close relationship possibly with the formation of fibroids. It has been pointed out that pituitary disturbance will appreciably affect and maintain the permanence of these cysts. So we would hazard a diagnosis in this case of fibromyomata of the uterus with uterine polyps associated with bilateral cystic ovaries with a background of pituitary disease, bearing in mind the remote possibility that adenocarcinoma of the uterus may likewise be superimposed.

DR JOE VINCENT MEIGS I think that Dr Leland has covered the subject very well.

There are two or three things that strike me. One is the lowered metabolism. Some patients with myxedema have abnormal bleeding. Another is that this bleeding might be explained on two bases. One is that she has follicular cysts of the ovary containing estrin, which could be responsible for hyperplasia of the endometrium, which in turn might be responsible for the bleeding, as Dr Leland has just suggested. Another is that she might possibly have a corpus luteum cyst of the ovary or a persistent corpus luteum which would account for her forty day interval between periods and the large amount of flowing at the time she did bleed. There might be an endometrium decidual in type without pregnancy, due to the persistent lutein action.

I do not know whether this is the case here or not, but I remember a patient whom I saw some time ago, a woman who had abnormal bleeding of this type and who had had a trial with the luteinizing hormone and did not respond. She had carcinoma of the endometrium at twenty-nine or thirty years of age. I think that is a very distinct possibility in this case. Also we must bear in mind that the so called granulosa cell type of carcinoma of the ovary secretes estrin, and like simple follicular cyst causes hyperplasia of the endometrium and abnormal bleeding. The description of the patient herself suggests some pituitary dysfunction.

DIAGNOSIS

Adenocarcinoma of the uterus

PATHOLOGIC DISCUSSION

DR TRACY B MALLORY The patient was curetted and the curettage showed material that in gross was obviously carcinoma. Following that she had a hysterectomy. The uterus shows a well-marked adenocarcinoma of the fundus.

The ovaries were not enlarged and contained no cysts of any significant size and no corpora lutea

The long period of purely functional bleeding in this case with the marked suggestion of pituitary disturbance would tremendously tempt one to consider it solely a functional case

The possibility of carcinoma even at such a very early age is well worth emphasizing. It certainly was fortunate that at least at the second curettage a diagnosis of carcinoma was made. It certainly suggests that the carcinoma developed on the basis of long-standing hyperplasia

DR. AUBREY O HAMPTON. I should like to ask Dr. Meigs what bearing he thinks the x-ray treatment would have on the diagnosis. She had a sterilizing dose of x-ray

DR. MEIGS. If the patient did not respond to this treatment carcinoma should be considered in spite of a negative curettage

I think the important lesson to learn and one that we all ought to learn now that we are using hormone treatment, is that it might be very easy to treat a patient with cancer. If you have made up your mind that the bleeding in a case should respond and the hormone does not make it respond there is a great necessity to find out whether there is any malignant lesion present or not

CASE 20152

PRESENTATION OF CASE

A thirty-five year old Lithuanian housewife entered the hospital complaining of excessive uterine bleeding

Her menstrual periods began at the age of thirteen or fourteen and were regular, occurring every three weeks and requiring two or three pads a day. She had no pain and no leukorrhea. Nine months before admission she had flowing for three weeks and again the following month had excessive flowing. The next month she had no menstrual period but the following month, six months before admission she again had excessive flowing. She missed the next two months. Three months before admission she had excessive flowing. The following month the period lasted two weeks. Two weeks before admission flowing began and had continued ever since. She passed a few clots. At no time was there any pain or discomfort in the pelvis or back. During the week before entry she had used from four to seven pads daily and felt somewhat weak. Her bowels were constipated. Her appetite was good. There were no urinary symptoms

She had always been well. There was no history of scarlet fever, diphtheria or rheumatic fever. About three weeks before admission following an automobile accident she had excessive flowing. At that time she had dilatation and

curettage at a hospital. Following this her periods were normal until the onset of her present illness

Her husband and one child were living and well. There had been no miscarriages

Physical examination showed a well-developed and well-nourished woman. There was an occasional extrasystole and a soft systolic murmur at the apex. The blood pressure was 110/70. The lungs were clear. Examination of the abdomen was negative. Vaginal examination showed a large amount of old blood in the vagina. The cervix was lacerated but was not well visualized. It had an eroded lacerated, granular feeling by digital examination. The fundus of the uterus seemed slightly larger than normal. The vaults were clear

The temperature was 98°, the pulse 95, the respiratory rate 20

Examination of the urine showed a specific gravity of 1.034. The sediment contained an occasional white blood cell and large numbers of red blood cells. Examination of the blood showed a red cell count of 4,600,000, hemoglobin 70 per cent. The white cell count was 7,500 with 62 per cent polymorphonuclears

On the fourth day operation was done a trachelorrhaphy supravaginal hysterectomy and right salpingo-oophorectomy. She ran an uneventful convalescence except for a slight fever and slight urinary incontinence. She was discharged on the twenty-first day

CLINICAL DISCUSSION

DR. HENRY H. FAXON. In many respects this case is similar to the one that Dr. Leland discussed and I think that my mind worked in part along similar lines

She was thirty-five years old which puts her in the possible cancer age and also at the approach of the menopause possibly. Her menstrual history had been normal, menstruation starting at the usual time and the flow being regular, although she had run on a three-week cycle, in other words at a shorter interval than the normal twenty-eight days, which would suggest possibly the lack of luteinizing hormone even from the start. She had no pain and no leukorrhea which suggests no pressure in the pelvis, no pelvic inflammation, and no discharge that might come from the cervix. The story of her periods per se was essentially that of menorrhagia and skipped periods. The automobile accident aggravated the condition, but I think was incidental rather than causative in any way

There is mention here that she passed clots. I think no especial significance need be laid to this, although with fibroids the passing of clots is of more frequent occurrence than when they are not present

Her bowels were constipated, but from that one statement alone no special conclusion can

be drawn We do not know whether she was becoming any more constipated or whether constipation was the rule in her case If it had increased it might suggest pressure in the pelvis, but the physical examination failed to disclose any such pressure There are no urinary symptoms

The past history shows no disease that might have sequelae

She had a dilatation and curettage about a month before she entered The physical examination we are given leaves something to be desired in the situation We should like to know what the condition of the cervix was, the size of the uterus, and so forth It seems to me that if she had been recently curetted and examined under ether we might well exclude the possibility of carcinoma of the cervix She had no discharge between periods and no vaginal bleeding I am inclined to think the dilatation that was done a month before helps us to exclude certain pelvic pathology It is of interest that the dilatation did not correct her condition After two weeks she again had an abnormal amount of flowing

She had been pregnant From the story here we do not know how long she had been married or what the age of the child was, but the story is that of only one pregnancy The question comes up as to the possible causes for sterility, and we wonder whether there was a pelvic inflammation of which we have no evidence, or whether a certain amount of ovarian dysfunction might be the cause of her having only a single pregnancy

The fact that she had no miscarriage helps to rule out lues

The blood pressure, the extrasystoles and the soft systolic murmur can be explained on the basis of her blood loss

On pelvic examination the cervix was lacerated but not well visualized As I have said, I should think that any gross pathology would have been discovered at the time of the previous examination and curettage

We are told that the uterus was slightly larger than normal The explanation is either that the uterus was actually normal and the fundus contained a large amount of blood clot, that possibly not the fundus of the uterus but the ovary was being palpated, or else that she had some growth within the fundus of the uterus itself

The urinary findings are a little confusing A large number of red cells was reported, but we are not told whether that was confirmed by a second catheter specimen It seems to me that if real significance (other than vaginal contamination) had been attached to the urinary finding of blood, further investigation would have had to be done to make a definite diagnosis

The blood showed the red cell count to be 4,600,000, which signifies that she had no marked anemia in spite of the continued bleeding

The white cell count was 7,500, showing no evidence of infection or twisted pedicle that might have shut off the blood supply of a pedunculated fibroid or ovarian cyst

It seems to me that the bleeding in this case may have been due to some general blood disease of which we have no evidence, to functional causes, organic causes, or a combination of the latter two

So far as pregnancy and miscarriage go, the story is too long, and furthermore the dilatation and curettage rules out the possibility of incomplete miscarriage

Indirectly the pituitary, or thyroid, or some endocrine gland may have played a part, but there is no evidence of a lowered metabolic rate or of any disturbance of the pituitary

As for an ovarian tumor, it would seem to me that if a cyst of any appreciable size had been present when they examined her under ether they would have been able to detect it

Pelvic inflammation has been fairly well ruled out on the story and the absence of confirmatory physical findings

Malignancy of the cervix I think has to be excluded by the previous dilatation and curettage As to malignancy of the fundus, as Dr Leland pointed out in his case, she is a little young to expect that, and furthermore one would expect that, at the previous dilatation and curettage, diagnostic curettings would have been obtained A polyp of the cervix could be mentioned, but that again is excluded for the same reasons

The points that have been brought out as to the relation between the ovarian function and the occurrence of fibroids are interesting and have been amplified and explained here already

I arrive at the conclusion that the most likely cause of her bleeding was a fibroid of the uterus which was probably submucous and hard to detect both by examination and curettage If it was associated with multiple cysts of the ovary there would be a rational explanation for the operation of supravaginal hysterectomy and right oophorectomy that was done The removal of a single ovary suggests to me that possibly the right ovary was filled with small cysts, whereas the other was of the small sclerotic type My diagnosis here would be fibroid of the uterus with multiple cysts of the right ovary

DR GEORGE A. LELAND, JR. Dr Faxon's reasons are very logical One should have personal knowledge of the surgeon who did the preliminary diagnostic curettage a month before admission in order to be certain in excluding the various serious possibilities Upon curettage it is very easy to fail to find adenocarcinoma of the fundus, and it is not too dif-

ficult to fail to find a very early carcinoma of the cervix. We assume in this instance that the operator did know the man who did the curettage and was confident that the negative findings were in those two respects correct. I am wondering however that the surgeon was bold enough to leave in the cervix when he was going to remove the fundus, assuming that he found fibroids with estrin producing follicular cysts of the ovaries. If he is going to leave in one ovary, he is leaving in with it the cervix and perhaps some endometrial tissue as well. This is a cervix which is already known to be lacerated. There has been one childbirth. It appears to me that in such a procedure there is a slight potential risk of later trouble arising in that cervix.

DR. JOE VINCENT MEIGS: I have very little to say, except that I think the history of skipped periods and then much flowing is quite characteristic of the Shaw group I type of bleeding in

which there are follicular cysts of the ovary, absent corpora lutea, and marked hyperplasia of the endometrium. I also think this type of bleeding could be explained by pelvic inflammatory disease, where follicular cysts of the ovary are not uncommon.

DIAGNOSIS

Menorrhagia

PATHOLOGIC DISCUSSION

DR. MALLORY: The surgical specimen which was removed showed a diffusely enlarged uterus with a markedly hyperplastic endometrium. There was no fibroid. The one ovary which was removed contained, as predicted, multiple follicular cysts and no corpora lutea. Unfortunately we do not know positively what may have been present in the opposite ovary. The findings, so far as they go, fit perfectly into the Shaw group I type of functional bleeding.

The New England Journal of Medicine

SUCCESSOR TO

THE BOSTON MEDICAL AND SURGICAL JOURNAL

Established in 1828

Published by THE MASSACHUSETTS MEDICAL SOCIETY
under the jurisdiction of the

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SUBSCRIPTION TERMS \$6.00 per year in advance postage paid
for the United States Canada \$7.04 per year \$8.58 per year
for all foreign countries belonging to the Postal Union.

Material for early publication should be received not later
than noon on Saturday. Orders for reprints must be sent to
the Journal office, 8 The Fenway.

The Journal does not hold itself responsible for statements
made by any contributor.

Communications should be addressed to The New England
Journal of Medicine, 8 The Fenway Boston, Mass.

ARCHIVES OF PEDIATRICS SEMI- CENTENNIAL NUMBER

THE *Archives of Pediatrics* having been the first journal on the diseases of infants and children published in the English language, its present editors have commemorated its semi-centenary—the original number appeared on January 15, 1884—by devoting the issue of February, 1934 to the reproduction of certain articles appearing in it during the course of its first year.

The cover of the first issue is reproduced, an issue appearing under the editorship of William Perry Watson, A.M., M.D., Physician for Diseases of Children to the Central Dispensary and Assistant to Christ Hospital, Jersey City, N.J. The collaborators at that time were J. Lewis Smith of New York, J. M. Keating of

Philadelphia, F. Forchheimer of Cincinnati, Marcus P. Hatfield of Chicago, Henry D. Ingraham of Buffalo, Joseph P. Oliver of Boston, Edward Borch of St. Louis, William T. Plant of Syracuse and Jerome Walker of Brooklyn. Foreign countries were represented by Goodhart of London, Finlayson of Glasgow, Ashby of Manchester and Blackader of Montreal.

Following are a number of original communications: Convulsions in Children by William T. Plant, Congenital Lipoma by Abraham Jacoby, The Hygienic Management of the Summer Diarrhea of Infants by J. Lewis Smith, Clinical lectures are on Infant Feeding by John M. Keating, Rachitis by F. Forchheimer, and Intestinal Indigestion by Louis Starr. Clinical memoranda are contributed by L. Emmett Holt, William P. Northrup and Henry Dwight Chapin.

A characteristic feature of these communications of fifty years ago is their clinical nature and the accuracy of their detailed descriptions of signs and symptoms. Thus Plant, in his paper on convulsions in children: "The whole body is in violent, uncontrolled action. The facial muscles are twitching, giving to the features the most frightful expressions. The mouth is distorted, and often the lips and chin are covered with a bloody foam. The eye-balls are turned up under the lids, or to one side, or are rapidly jerked this way and that. The lingual muscles take part in the general mêlée and frequently the tongue is severely lacerated by the teeth. The head is drawn backward or to one side by a succession of spiteful jerks. Generally the face is livid from congestion, exceptionally it is pale. The arms and legs are in ceaseless convulsive movement. The forearms are rapidly bent and extended on the arms, there are alternate movements of incomplete pronation and supination and the limbs are twisted and drawn into various awkward and grotesque shapes. Usually, the legs are less roughly dealt with than the arms."

A touch of humor is added and advice with a reminiscent note is given to the young physician on first encountering a case of convulsions: "Here are good ladies longing to be of use, give them something to do. Ask one of them to provide a plentiful supply of hot water, and another to look up a bath or wash tub. If the child is in a small room, assign to another the task of carrying it to a larger one and loosening the clothing at the neck and waist."

This number, collected from the archives of a half century ago, is well worth perusal. Some of its contents might not stand the scrutiny of modern scientific exactitude but their descriptions of disease are classical and the sound common sense introduced might afford an example to more modern writers.

A NEW APPARATUS FOR INVESTIGATION OF THE NERVOUS SYSTEM

An electrical device has recently been designed by Dr Richard U Light of the Yale University School of Medicine and Professor E L Chaffee of the Department of Physics of Harvard University for experimental exploration of the functions of the nervous system. By an ingenious method of implanting small secondary coils in an animal at excitable centres and then by bringing the subject into a magnetic field created by a primary circuit, Jacksonian attacks from stimulation of the motor area in the monkey a condition of somnolence after excitation of the hypothalamic region contraction of the tongue from implantation of the electrodes on the hypoglossal nerve and a copious flow of highly acid gastric juice and violent peristalsis, from stimulation of the vagus on the lower esophagus of a dog have been repeatedly demonstrated. Some of the implanted coils, covered with collodion have remained in place for as long as seven months without evidence of irritation of tissue or of cyst formation. By this method the restrictions of time, anesthesia and restraint of the animal are removed and a wide range of exploration of function is possible. The exciting stimulus may be activated over months without disturbing in any way the habits or activity of the animal. Thus a new and important principle of investigation has been invented which should be particularly useful in the study of such autonomic functions as sleep, sugar and water metabolism, menstruation, blood pressure digestive activity and temperature control. The possible results of research by this apparatus are of the greatest interest in the wide field of medical science. A preliminary report of this important work has been published in *Science*, March 30 1934.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors

TRUESDALE, PHILEMON E. M.D. Harvard University Medical School 1898 F.A.C.S. Surgeon, Truesdale Clinic Fall River Massachusetts. His subject is "Hernia of the Diaphragm. Esophageal Type In Adults." Page 781. Address 151 Rock Street Fall River, Massachusetts.

HIEBERT J. MARK. M.D. Boston University School of Medicine 1932. Formerly House Officer, Children's Medical Service Massachusetts General Hospital. Address 282 Grant Avenue Nutley New Jersey. Associated with him is

GARLAND JOSEPH. A.B. M.D. Harvard University Medical School 1919. Physician to Children's Medical Service Massachusetts General Hospital. Consulting Pediatrician, Massachu-

setts Eve and Ear Infirmary, Instructor in Pediatrics, Harvard Medical School, Consulting Pediatrician to New England Baptist Hospital and Addison Gilbert Hospital Gloucester. Address 264 Beacon Street, Boston Massachusetts. Their subject is "Hereditary Ectodermal Dysplasia of the Anhidrotic Type, with Case Report." Page 784.

VOSE, SAMUEL N. M.D. Boston University School of Medicine 1918 F.A.C.S. Assistant Professor of Genito-Urinary Surgery, Boston University School of Medicine. Surgeon, Department of Genito-Urinary Surgery, Massachusetts Memorial Hospitals. Consulting Urologist, Leonard Morse Hospital Natick, Norwood Hospital and Martha's Vineyard Hospital. His subject is "Hydronephrosis Due to Subepithelial Fibrosis. Treatment by an Adaptation of Rammstedt's Technique." Page 786. Address 15 Bay State Road Boston Massachusetts.

O'CONNOR, CORNELIUS T. A.B. M.D. Harvard University Medical School 1924. Visiting Gynecologist, St Elizabeth's Hospital Brighton. His subject is "Local Anesthesia in Obstetrics." Page 788. Address 476 Commonwealth Avenue, Boston Massachusetts.

COTTON, FREDERIC JAY. A.B., A.M., M.D. Harvard University Medical School 1894 F.A.C.S. Consulting Surgeon Boston City Hospital, Faulkner Hospital Newton Hospital, New England Hospital for Women and Children Chelsea Memorial Hospital and Cape Cod Hospital, Hyannis. Address 520 Commonwealth Avenue, Boston Massachusetts. Associated with him is

MORRISON GORDON MACKAY. A.B. M.D. Tufts College Medical School 1926 F.A.C.S. Assistant Outpatient Surgeon, Boston City Hospital. Visiting Surgeon Chelsea Memorial Hospital. Junior Visiting Surgeon, Newton Hospital. Consulting Surgeon at Huggins Memorial Hospital, Wolfeboro New Hampshire, Framingham Union Hospital and Leonard Morse Hospital Natick. Address 520 Commonwealth Avenue, Boston Massachusetts. Their subject is "Rigid Flat Foot—Remodelling." Page 792.

AITKEN ALEXANDER P. M.D. Tufts College Medical School 1928. Instructor in Surgery, Boston University School of Medicine. Assistant in Surgery, Boston City Hospital. Junior Surgeon, Chelsea Memorial Hospital. His subject is "A Separate Ossification Centre for the Internal Malleolus." Page 793. Address 520 Commonwealth Avenue, Boston Massachusetts.

RUSHMORE, STEPHEN. A.B., M.D. Johns Hopkins University School of Medicine 1902 F.A.C.S. Secretary Massachusetts State Board of Registration in Medicine. Dr Rushmore presents his "Address at the Hearing on House

Bill 118 " Page 795 Address 520 Commonwealth Avenue, Boston, Massachusetts

DIXSON, IRA M A B, M D Harvard University Medical School 1928 His subject is "Salyrgan Its Long-Continued Use in Cardiac Insufficiency with Latent Edema " Page 800 Address Stockbridge, Massachusetts

FITZ, REGINALD A.B, M D Harvard University Medical School 1909 Associate Professor of Medicine, and Chairman of the Library Committee, Library of the Medical School and the School of Public Health, Harvard University His subject is "A Note on the History of Lead Poisoning in Boston." Page 802 Address 721 Huntington Avenue, Boston, Massachusetts

HORRAX, GILBERT A B, M D Johns Hopkins University School of Medicine 1913 Head of Neurosurgical Department, The Lahey Clinic, Boston, Massachusetts Neurosurgeon to the New England Baptist and New England Deaconess Hospitals, Boston His subject is "Intracranial Lesions " Page 806 Address 605 Commonwealth Avenue, Boston, Massachusetts

The Massachusetts Medical Society

THE TREASURER'S REPORT

COVERING REFUND DISTRIBUTION

THE Treasurer of the Massachusetts Medical Society makes the following report regarding the refund to District Societies for 1934

The Council voted to distribute the sum of \$5000 to District Societies The total number of payments of annual dues received by the Treasurer, for March 1st and to be counted for the refund was 3229 Therefore the refund to the District Societies for each paid Fellow is \$15484

The following table gives the number of payments in, and the refund to, each District

District	Number Reported Paid	Check
Barnstable _____	35	\$54 21
Berkshire _____	80	123 88
Bristol North _____	51	78 98
Bristol South _____	145	224 53
Essex North _____	136	210 59
Essex South _____	163	252 40
Franklin _____	31	48 02
Hampden _____	182	281 82
Hampshire _____	40	61 95
Middlesex East _____	82	126 98
Middlesex North _____	89	137 82
Middlesex South _____	571	884 15
Norfolk _____	563	871 76
Norfolk South _____	82	126 98

Plymouth _____	96	148 66
Suffolk _____	503	778 86
Worcester _____	323	500.14
Worcester North _____	57	88.27
	3229	\$5000 00

In 1933, for comparison, the total number of payments for the refund was 3177

CHARLES S BUTLER, M D, *Treasurer*
April 2, 1934

MASSACHUSETTS LEGISLATIVE NOTES

REPORT ON CHIROPRACTIC AND OTHER HEARINGS

On Tuesday, April 3, 1934, there were three hearings before the Legislative Committee on Public Health The hearings had been set on rather short public notice so that they did not appear in the Bulletin of Committee Work for March 26, 1934, and were not noted in the issue of the *Journal* for March 29, 1934

The first bill considered was Senate 162 which accompanied the petition of Joseph Conway for certain amendments to the law relative to registration and practice of chiropractors Mr Conway acknowledged that the Bill as drawn was unsuitable and that an impasse had been reached by the persons favoring and opposing the registration of chiropractors He was confident that a reasonable solution could be reached and asked that a subcommittee of three members of the Legislative Committee on Public Health meet with three physicians, representing the State Department of Public Health, the State Board of Registration in Medicine and the Massachusetts Medical Society and with three chiropractors or representatives of chiropractic to seek a solution in conference and to report their findings to the Legislative Committee

There spoke against the bill, Dr Thomas J O'Brien for the Massachusetts Medical Society, Dr Gaylord W Anderson, Deputy Commissioner of the State Department of Public Health, Dr Stephen Rushmore for the State Board of Registration in Medicine, Mr Frank Kiernan, Executive Secretary, Massachusetts Tuberculosis League, and Miss Dieter for the Massachusetts State Nurses Association. Mr Kiernan referred to several thousand persons who had come to his attention during ten years of work in the State of New York, at a time when they were hopelessly ill from tuberculosis and who in the early and curable stages had been under the care of chiropractors A number of other persons expressed their opposition by a rising vote

The second bill was House Bill 118, introduced by the Board of Registration in Medicine, the most important provision of which would give to the Board discretionary power of approval of medical schools from which graduates are accepted for examination.

The Board was represented by the Secretary Dr Stephen Rushmore, whose remarks appear elsewhere in the *Journal*.*

Dr Anderson, Deputy Commissioner of the State Department of Public Health also spoke for the Bill, on the grounds that increased protection of the health of the people of Massachusetts demanded raising the statutory qualifications for practice. He called attention also to the generally acknowledged inadequacy of the examination test to determine actual fitness for practice.

On account of the length of the hearing it was interrupted by recess and a number of persons registered their approval of the Bill leaving their names with the Clerk of the Committee.

Opposition to the Bill was led by Mr C Ruggles Smith, Registrar of Middlesex College of Medicine and Surgery, who emphasized the importance of having medical schools independent of the control of the "Medical Trust" described in the terms usually employed on such occasions, which, it was alleged, controls all the State Boards of Registration in Medicine in the United States including the Massachusetts Board. Professor Joseph Cheskis of Middlesex College of Medicine and Surgery, perforce described the difficulties of the poor boy in getting an education. The Secretary of the Board had pointed out that one of the not approved schools which advertised as specializing in "poor boys" acknowledged that it could do "little financially" and admitted that "perhaps it was better that it could not help in this way."

Mr William Blatt, Professor of Medical Jurisprudence at the College of Physicians and Surgeons, Boston and Mr George W Boland lecturer on the same subject in the same institution also spoke against the Bill.

The third bill was House 755, introduced by Mr Dever of Cambridge, on petition of C Ruggles Smith for amendment to the law relative to registration of physicians and surgeons. Mr Smith and Mr Boland spoke for it. The first provision of the bill is to make unacceptable as a qualification for admission to examination, attendance at schools not empowered to confer degrees even though legally chartered. The dispute on this point, for no principle is involved seems to concern two factions among osteopathic interests only, for if schools once chartered are permitted to degrade medical education as much as they please the mere lack of power by one medical school to confer degrees would not appreciably affect the health of the public.

The second provision asks for repeal of the section of the Massachusetts statute which empowers the Board of Registration in Medicine to accept the examination of the National Board of Medical Examiners in place of its own examination. It is interesting to note that some persons who opposed giving the Board of Registration in Medicine discretionary power of approval of medical schools, because they know so little about medical education" being by statute not connected with a medical school

should be opposed to the Examiners of the National Board "because they are teachers in medical schools." So completely was the situation misrepresented that the view was expressed that it is not fitting that Massachusetts should accept the dictation of a body from outside the State. As the examinations of the National Board are accepted in over forty states and are generally regarded as more searching and difficult than any State board examination, the hearing showed a somewhat remarkable recrudescence of narrow partisanship and parochialism.

MISCELLANY

MATERNITY DEATHS

In a large American city an eminent board of medical men supervised a study of every maternal death during a period of three years. Competent physicians investigated every death as soon as possible after it occurred. Significant findings were made from the facts found and published under the authority of the local Academy of Medicine.

Of these deaths 658 were preventable. If the care of the women had been proper in all respects

The report states: Any group of deaths in which two-thirds of the total could have been prevented becomes immediately a most pressing problem. The Committee always asked this question: If this patient had had the advantage of the best possible attention and care, would this death have occurred? Where the answer to the question was in the negative they classified that death as preventable.

"There is a responsibility to see that every woman has such care.

It lies with the medical profession as a whole.

It lies with the individual members of that profession.

"It lies with society as it is represented in the numerous organizations for the improvement of the health conditions of that part of the social body which is forced into a greater or less dependence on the public health facilities.

It lies with the woman herself.

Do you think conditions in your own community are much better than this? They are not, unless the death rate reflects it. First, find out what the local mortality rate is—then compare it with the rate of 2.2 per thousand live births, which is the rate actually achieved among more than 5000 mothers cared for during eight years by the Maternity Center Association. The records of these cases were studied and the foregoing figures certified by Dr Louis I. Dublin, Statistician, Metropolitan Life Insurance Company.

MAY DAY—CHILD HEALTH DAY

On May 1 will be celebrated the tenth anniversary of National Child Health Day. In the years since its initiation by the American Child Health Association in 1924 the observance of the day has undergone significant changes. Each year it has

struck a deeper note. Each year new groups have realized that they had a contribution to make. Steadily from May Day to May Day, communities have come to understand that teamwork for child health is for the best interests of children.

Of all the values of May Day—Child Health Day, perhaps the greatest is the opportunity it presents to enlist the active interest of groups which might otherwise not give the subject of child health any particular thought, and to draw them into the general program.

The spirit of cooperation, be it local or state-wide, has been fostered by the activities which have had May Day—Child Health Day as their inspiration. Communities working together for a single project have acquired a spirit of effective cooperation, and have discovered its values as well as its difficulties. They have found that working together was time-saving, money saving, and sometimes life-saving.

At this time, more than ever, with reduced appropriations and budgets, individuals and groups should come together to meet the desperate needs of the hour.

The Conference of State and Provincial Health Authorities of North America, the body which last year assumed the responsibility for the national conduct of Child Health Day, believes that adequate care for babies and for expectant and nursing mothers must be the foundation on which to build a nation of healthy children. They will therefore use this year the slogan, Mothers and Babies First. The health officers are fighting to maintain the public health measures which they believe most necessary to protect infant and maternal health. Popular support is needed as never before. In nearly every state the State Chairman for May Day is to be found in the State Board of Health or in the Bureau of Child Hygiene, where such exists. So that, where

COMPARISON OF DISEASE INCIDENCE IN CONNECTICUT WITH 1933 AND SEVEN YEAR AVERAGE

MONTH ENDING MARCH 31, 1934

Diseases	1934				Average cases reported for week corresponding to March 31 for past seven years	1933			
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Cerebrospinal Men	1	1	—	—	1	2	1	1	—
Chicken Pox	173	115	91	72	82	167	135	134	117
Conjunctivitis Inf	—	1	9	9	—	—	—	—	1
Diphtheria	2	6	8	6	17	5	4	6	10
Dysentery Amebic	1	1	—	—	—	—	—	—	—
Encephalitis Epid	1	2	—	1	—	—	—	—	—
German Measles	1	4	1	4	44	9	3	2	6
Influenza	2	15	1	1	20	7	12	19	11
Measles	36	38	26	34	323	328	159	240	214
Mumps	279	100	134	96	108	105	82	88	119
Pneumonia (Broncho)	37	33	34	29	40	23	26	22	29
Pneumonia (Lobar)	39	36	34	41	57	27	35	44	44
Scarlet Fever	71	92	81	65	118	115	176	147	167
Septic Sore Throat	5	2	2	3	3	1	3	4	6
Smallpox	—	—	—	—	—	—	3	—	1
Tetanus	—	—	1	—	—	—	—	—	1
Trachoma	—	—	—	—	—	—	1	—	—
Trichinosis	1	1	—	—	—	—	—	8	1
Tuberculosis (Pul)	25	25	20	22	29	24	35	16	32
Tuberculosis (O F)	2	2	—	2	4	3	1	2	3
Typhoid Fever	1	—	2	—	1	1	—	—	2
Undulant Fever	1	—	—	1	—	—	2	1	1
Whooping Cough	75	57	67	54	80	94	106	87	111
Gonorrhea	22	24	39	17	32	33	15	26	26
Syphilis	48	44	48	39	39	70	49	33	36

Remarks: No cases of Asiatic cholera, glanders, plague or yellow fever during the past seven years.

it seems desirable, the opportunity exists for promulgating a state-wide May Day program covering some particular aspect of child health

More often, however communities decide on their own local projects, which may cover babyhood, the preschool age or the child at school, or all three. Whatever the project, National Child Health Day is becoming year by year more productive of practical results

From the first year of its observance May Day—Child Health Day has had for its symbol the daisy. There is something in the milk white beauty of its petals which recalls the innocence of childhood. Those who know this flower will recognize also its vitality. Drought cannot kill it, storms do not harm it. We want this vitality for our children, we want so to build that, as Calvin Coolidge once said "America may produce men and women worthy of our standards of citizenship. This can only be done by joint action. No home, no school, no public or private agency can take on the whole task. Team work and understanding of all are needed to reach the goal of May Day—children whole and healthy in body, mind and spirit.

MORTALITY RATES

Telegraphic returns from 86 cities with a total population of thirty-seven millions for the week ending March 24 indicate a mortality rate of 12.5 against a rate of 11.7 for the corresponding week of last year. The highest rate (22.4) appears for Hartford, Conn. and the lowest (4.7) for Yonkers, N. Y. The highest infant mortality rate (13.0) appears for Peoria, Ill. and the lowest for Evansville, Ind., Miami, Fla., Salt Lake City, Utah, Schenectady, N. Y., Somerville, Mass., South Bend, Ind., and Tacoma, Wash., which reported no infant mortality.

The annual rate for 86 cities is 12.7 for the twelve weeks of 1934 as against a rate of 12.3 for the corresponding period of the previous year—*Bureau of the Census*

The mortality rate for February and March 1934 is now above that of the corresponding months of 1933

CORRESPONDENCE

A VERDICT AGAINST A PHYSICIAN IN A CASE OF SYMPATHETIC OPHTHALMIA WITH COMPLETE LOSS OF VISION

Editor *The New England Journal of Medicine*

The above-mentioned case deserves the attention of the medical profession and the public for reasons which I will presently discuss.

The history of the case is as follows:

On July 13, 1927, a boy of 15 was struck in the right eye by a piece of steel (2 mm. by 1 mm.) which was hammered off an automobile wheel rim. The boy went home and applied cold compresses

On the following afternoon he called at the office of an oculist who, according to the latter's statement, recommended that he go to a hospital. This statement was denied by the plaintiff. On July 16 the boy called at my office accompanied by a gentleman. I saw a small prolapse of the iris in the left eye, a traumatic cataract and an irritation of the eye with photophobia and lachrymation.

Not knowing whether the piece of steel had penetrated into the eye, whether it was there or in the orbit, I advised that the boy be taken to the Massachusetts Eye and Ear Infirmary immediately, emphasizing the danger which might threaten the other eye in case they did not obey my directions. The boy could count fingers at a near distance with the injured eye. The left eye was in perfect condition.

There was no question in my mind that, if there was a piece of steel in the eye, and attempts to remove it were unsuccessful, the right eye should be removed in order to prevent a sympathetic ophthalmia. As the latter occurs usually not before the third week, there was plenty of time to take care of the case and prevent total blindness. The injured eye would not be of much use anyway, taking into consideration the damage already done.

On the same day (sixteenth) the patient entered the Eye Infirmary where an x-ray was taken showing the piece of steel near the optic nerve. That same day and also on the following days several unsuccessful attempts to remove the piece of steel with a giant magnet were made and on July 20, a week after the accident, an attempt to remove the piece of steel through an incision and introduction into the eye of a small magnet ended in failure. On July 23 the relatives were advised to give permission for removal of the right eye and on the twenty-sixth the boy was discharged, such permission being denied.

At that time (July 26) neither symptoms of sympathetic inflammation nor even those of sympathetic irritation of the left eye were recorded. During the first week of August the boy was seen by another oculist who diagnosed sympathetic ophthalmia and removed the injured eye but the case resulted in complete blindness.

Is the first oculist who saw the patient on July 14 to blame for the total blindness of the patient?

The oculist of the Eye Infirmary who was in charge of the case and I answered in the negative while the oculist called by the plaintiff answered in a manner which could convey the impression that the delay of two days might have been essential.

No one can deny that the physician who saw the patient on July 14 would have acted more wisely if he had insisted on sending the boy to a hospital despite the objections of the patient or his relative. Few of us if any do not make mistakes or omissions. The point in question is whether the patient's blindness is the accused physician's, nobody's or somebody else's fault.

The lawyer for the plaintiff tried to show that

struck a deeper note Each year new groups have realized that they had a contribution to make Steadily from May Day to May Day, communities have come to understand that teamwork for child health is for the best interests of children

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Smallpox	—	—	—	—	—	—	3	—	1
Tetanus	—	—	1	—	—	—	—	—	1
Trachoma	—	—	—	—	—	—	1	—	—
Trichinosis	1	1	—	—	—	—	—	8	1
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Typhoid Fever	1	—	2	—	1	1	—	—	2
Undulant Fever	1	—	—	1	—	—	2	1	1
Whooping Cough	75	57	67	54	80	94	106	87	111
Gonorrhea	22	24	89	17	32	33	15	26	26
Syphilis	48	44	48	39	39	70	49	33	36

Remarks No cases of Asiatic cholera, glanders, plague or yellow fever during the past seven years

fever of 102° On April 5 a rash said to be characteristic of measles appeared. At this time the patient complained of pain in the right lower quadrant, aggravated by lying on the right side. The pain persisted. On April 7 she vomited twice. The appetite remained good until April 11 when nausea and vomiting occurred. On April 15 the pain became more severe. She was admitted to the surgical service on April 16, acutely ill and with a well-defined suprapubic mass about four inches in diameter. The mass was also palpable on rectal examination and was very tender. An appendix abscess was drained soon after admission. A part of the appendix and a concretion were found free in the abscess. The colon bacillus was recovered on culture. Convalescence was satisfactory and she was discharged on May 9. She returned on July 31, 1933 and an incisional hernia was repaired. The rest of the appendix was removed. She was discharged August 15.

D B, No 170224 was admitted to the Isolation Building on April 21 1933. For five weeks there had been anorexia occasional nausea and mild attacks of pain in the right lower quadrant. Four days before admission there was photophobia and fever. The day before admission a typical rash appeared. Sharp pain in the right lower quadrant followed by vomiting occurred. The temperature was 103°. On admission, a measles rash was present and there were tenderness and muscle spasm. Immediate operation was done by Dr W E Ladd and an acutely inflamed appendix, wrapped in omentum which covered an appendiceal abscess, was removed. There was some free fluid in the peritoneal cavity and one drain was introduced. Convalescence was gratifying and she was discharged home in the care of a local physician on April 30.

J McM. Framingham Union Hospital No 21942 became ill February 12 1934. A typical measles rash was noted February 16. Beginning February 20 there was generalized abdominal discomfort which persisted. He vomited several times on February 20 and there was diarrhea for the four succeeding days. Between February 24 and March 2 he appeared to improve. Fever and tachycardia which had been present were lessened. On March 2 the temperature rose and he complained of right sided abdominal pain. On March 4 the temperature was 103° pulse rate 120 and the child seemed quite ill. There was tenderness and muscle spasm in the right flank and right lateral aspect of the abdomen. The tenderness was most acute at McBurney's point about which an indefinite mass was palpable. On March 5 operation was performed and an appendix abscess drained. Convalescence was very smooth and he was discharged March 22.

L M Framingham Union Hospital (Number unsigned) was well on March 18. On March 19 there was vomiting diarrhea with mucus and a temperature rising rapidly to 105°. The diarrhea persisted. On March 21 the rash was noted. On March 24 he began to complain of abdominal pain which persist

ed and was paroxysmal. It was confined to the lower abdomen. At times he became distended and a rectal tube gave relief. On March 26 the rash disappeared but abdominal pain, diarrhea, and fever as high as 101° persisted. There was no vomiting. This morning (March 31) the temperature was 99.2° but had been 103° during the night. There was a well-defined midline mass about six inches in diameter extending from the symphysis pubis to the umbilicus. Maximum tenderness and resistance was noted about two inches below and to the left of the umbilicus. The mass was easily felt by rectum. Operation was performed today through a left rectus incision and a very large abscess drained. The appendix was not seen or felt, but the abscess had the characteristics of one of appendiceal origin.

Personal observation of five cases of appendicitis and measles two occurring within a month and in a single community seems more than a coincidence. In addition I have been told of two similar instances, one now in the Children's Hospital, and one additional case in Framingham.

This experience indicates that those gastro-intestinal symptoms associated with measles and variously termed enteritis, ileo-colitis and colitis, be given critical study with the possibility of acute appendicitis in mind.

Yours very truly,

HENRY W HUDSON JR., M.D.

66 Commonwealth Avenue, Boston, Mass

REFERENCES

- 1 Thenebe C. L. Hirschberg M. and Cenci V. Acute appendicitis as a complication of measles. Arch. Pediat. 50:1 (Jan.) 1933.
- 2 Williams Harold. A case of measles complicated by appendicitis. Boston M. & S. J. 144:642 (June 2") 1901.

MEASLES AND TUBERCULOSIS

April 2 1934

Editor, The New England Journal of Medicine

Apocryphos of the recent and widespread epidemic of measles in this state, it occurs to me that it is well to direct attention again to the danger of pulmonary tuberculosis as a sequela of measles.

There has been valuable work done in the survey of school children for the early detection of pulmonary tuberculosis and I believe the general practitioner can draw a lesson from that survey which together with other studies shows that the juvenile type of pulmonary tuberculosis can best be detected in its earliest stages by the skin test and a roentgenologic study of satisfactory plates of the chest.

Since a positive skin test does not indicate the location of the infection, it seems to me that only the x-ray plates are necessary primarily for the diagnosis which if positive may be corroborated by other clinical measures and allow of the earliest medical supervision. If the child is in the border line class he can be better directed under the phy

during the first two days an infection and sepsis occurred. What does one mean by the words "infection and sepsis" in the eye? As I see things it means suppuration. But there was no pus in this case. And if pus had resulted because of the delay, it would have been very beneficial in this case, as panophthalmitis usually does not cause sympathetic ophthalmia. The piece of steel, which penetrated into the posterior sclera near the optic nerve, must have been hot and sterile. What took place was a peculiar plastic iridocyclitis with a consequent sympathetic ophthalmia, the cause of which is not known. Meller described lately a case in which notwithstanding the fact that a splinter of steel was removed immediately, a sympathetic ophthalmia developed in the other eye in six weeks after the injury. Crisp in his editorial in the March, 1933 issue of the *American Journal of Ophthalmology* said "The determination of its (sympathetic ophthalmia) etiology has long been counted among the seeming impossibilities of medical science."

This type of inflammation may result from injury other than a penetrating wound. I had a case in which a small boy after a fall developed a detachment of the retina in one eye with no visible injury to the latter. It resulted in an iridocyclitis with a consecutive sympathetic irritation of the other eye.

Therefore, as yet it is proper to speak of a peculiar plastic inflammation which tends to spread to the other eye, and the cause of which is unknown. The words "infection and sepsis" befuddled the issue and conveyed a wrong impression to the jury.

Even the timely removal of an injured eye (before sympathetic ophthalmia has started) in rare cases does not prevent sympathetic ophthalmia since the latter has been recorded as late as 53 days after the removal of the injured eye. An oculist cannot help knowing that blindness in this case might have been due to the delay in the removal of the injured eye rather than to the delay in the removal of the piece of steel.

The accused physician was made a scapegoat. The jury rendered a verdict against the physician in the sum of \$22,000.

On appeal of the physician, the judge set aside the verdict of the jury and ordered a new trial. The physician decided to settle the case out of court, which he did, and closed the case.

This trial shows the weak points in court proceedings against physicians accused of malpractice.

In order to avoid decisions based on a wrong evaluation of facts it would be advisable, in my opinion to amend the court practice in such a way:

1. The jury in such cases should include at least one physician and
2. The decision should be taken by a majority vote so that the jurymen physician could not block the decision.

Besides, as suits for malpractice in some cases may have their origin in a careless remark of an

other physician who happened to come in touch with the case, the physicians connected with the case should not be allowed to testify. The court should appoint experts, whose authority is beyond a reasonable doubt, to state and evaluate the facts.

Yours truly,

O R LOURIE, M.D.

485 Commonwealth Avenue,
Boston, Mass

APPENDICITIS AND MEASLES

March 31, 1934

Editor, *New England Journal of Medicine*,

The prevalence of measles in Eastern Massachusetts, now reaching epidemic proportions, suggests the desirability of calling attention to acute appendicitis as a complication of, or coexisting with, measles.

Available texts of pathology and of pediatrics discuss the respiratory and aural complications, but on hurried examination were not found to include a discussion of this complication.

Accurate data concerning the incidence were not found. However, Thenebe, Hirschberg and Cinci in the *Archives of Pediatrics* for January, 1933 report six cases in a group of 371 cases of measles admitted to the Hartford Isolation Hospital. Five cases were operated on subsequent to admission and one was admitted after operation in another hospital. All were proved cases. There were no deaths. The incidence of 1.6 per cent is high because uncomplicated cases are not so frequently hospitalized. These authors found little literature on the subject. The first report they found was by Williams of Boston, in 1912. They quote E. C. Smith of the Haynes Memorial Hospital as saying the complication is not rare.

The following five case summaries lend weight to this belief and the fact that two have been seen within the last month and in one community indicates that consideration is pertinent.

D. S. (Children's Hospital No. 146439) complained of headache on February 9, 1931, and had cough, conjunctivitis and fever of 102.5°. These persisted and a characteristic measles rash appeared on the third day. He then complained of pain to the right of the umbilicus. The pain persisted and was of a dull character. There was irregular fever reaching 103°. He was admitted to the private ward on February 20, acutely ill with fever of 103° and a tender firm mass in the right flank. On February 22, a large retrocecal appendix abscess was drained. The appendix was not removed. The colon bacillus was recovered from a culture. Convalescence was uneventful and he was discharged on March 12. He returned on May 15 and appendicectomy was performed the following day. The appendix was scarred, attenuated, and adherent lateral to the cecum. He was discharged in good condition May 25.

E. W., No. 3147869 on April 3, 1931, had a chill and

tended the Central Institute of Pittsfield, Me., for his preliminary education and later was graduated from the Medical School of Maine (Bowdoin) in 1888. He married Miss Abbie Tarr of Etna, Me. His first practice was in Burnham, Me., and later in Plymouth Me. In 1896 he came to Lawrence, Mass. and did special work on eye, ear and throat, until his death on February 18, 1934, from coronary sclerosis following an illness of two days.

In 1896 fellowship in the Massachusetts Medical Society was taken and he served as Councilor, Censor and President of the Essex North District Medical Society. Following the passage of the original Workmen's Compensation Act in this state in 1911 which was passed without the advice or consent of the physicians of Massachusetts, the many inequalities of its provisions as related to the medical profession were early recognized. Through the earnest efforts of Dr. Merrill and other members of the Essex North District Society and other District Societies, a campaign was inaugurated which culminated in giving to the profession after spirited activity some improvements in the administration of the act, the most important being the adoption of the principle recognizing the right of the injured employee to choose his own physician.

Dr. Merrill was elected to the Medical Staff of the Lawrence General Hospital in 1900 and served as senior ophthalmic and antral surgeon until his recent resignation and election to the consulting staff.

Dr. Merrill accepted the office of trustee of the Lawrence Industrial School, was a member of the local Chamber of Commerce, a director of the Lawrence Tuberculosis League, a member of the Sanitary Milk Commission and consulting physician to the Danvers State Hospital.

Dr. Merrill held fellowship in the American Medical Association and was an active member of the Lawrence Medical Club for many years and a Fellow of the American College of Surgeons. He was a Mason and received the Knights Templar degree.

Among the more advanced special societies which enrolled the doctor's name were the American Academy of Ophthalmology and Oto-Laryngology, New England Ophthalmological Society and the New England Otological Society.

His survivors are his widow and two sons, one of whom Urban Howe Merrill, M.D., was associated with his father and will carry on his special work in the quarters which have so long known the senior Dr. Merrill. The second son is Ivan C. Merrill of Maine.

Dr. Merrill accepted a commission in the Medical Department of the Army in the World War and was called into service January 1, 1918, at the age of 53 and served during the war in New Mexico and at Camp Devens and was discharged as Captain following the armistice.

Our deceased friend was an example of a real

physician. His interest in his profession was marked by constant attendance and participation in all meetings to which he held allegiance. His strong support of all activities of value to physicians and patients was practical and valuable. In his professional work the humble station in life of any patient was no bar to his receiving proper treatment. Dr. Merrill possessed a good mind, was a quick thinker, was dignified and dependable. His great kindness to the younger men of the profession was acknowledged by all. His character and nature were such that the better one knew him, the more he was respected. It can be properly said of Dr. Merrill that he fulfilled every duty to his family, his profession and his fellowmen.

We the members of the Lawrence Medical Club do hereby express our feelings of great sorrow at the loss of our friend, companion and fellow physician, Dr. William H. Merrill.

GEORGE B. SARGENT, M.D.,

VICTOR A. REED, M.D.

J. FORREST BURNHAM, M.D., *Chairman*

March 26, 1934

NOTICE

LAWRENCE CANCER CLINIC

Lawrence, Mass.,
March 31, 1934

To the Physicians of the North Half of Essex County

Dear Doctor:

The regular Lawrence Cancer Clinic to be held at Lawrence General Hospital, 1 Garden Street, Lawrence, upon Tuesday, April 17, at 10:00 A.M., will be a Demonstration Clinic with Channing C. Simmons, M.D., of Boston, Associate in Surgery at Harvard University Medical School, acting Surgeon in Chief at Collis P. Huntington Memorial Hospital and member of the Cancer Commission of Harvard University, Boston, present as consultant. You are invited to accompany any of your patients whom you desire shall have this service or to send them with a note and a report will be returned to you. This service is gratis. Your attendance at the Clinic is always welcome.

This Clinic is endorsed by the Committee on Postgraduate Instruction of the Massachusetts Medical Society.

Committee

ROY V. BAKETEL, M.D.

CHAS. J. BURGESS, M.D.

FRED K. D. McALLISTER, M.D.

JOHN J. McARDLE, M.D.

HARRY H. NEVENS, M.D.

THOS. V. UNIC, M.D.

J. FORREST BURNHAM, M.D., *Chairman*

sician's care than allowed to run wild until such time as he may be definitely diagnosed as free from infection or the contrary, and if he is happily free from infection that knowledge is of inestimable value and comfort to all concerned

There may be a difference of opinion as to the priority of procedure but I believe our duty is not done until we have covered this aspect of the disease

Yours very truly,

WALTER A. LANE, M.D.

173 School Street, Milton, Mass

AN EXPENSIVE DISEASE

April 3, 1934

Editor, *The New England Journal of Medicine*,

A letter recently published in the *Journal* from Dr J Harper Blaisdell relative to the costs for tuberculous patients in the town of Winchster, Mass., prompted me to investigate the costs for similar service in my home town of Mansfield, Mass

I am given the following figures

The assessment received by the Selectmen of Mansfield from the County Commissioners of Bristol County for the support of the T B Hospital at Attleboro, Mass., for the year of 1933 was \$4712.02

The records show that during the year the town had one patient in the hospital for thirty five days for which \$46.80 was paid and another patient for seventy two days for which a check for \$94.90 was paid

The total bill, therefore, for the town for 1933 was \$4,853.72 for a total hospitalization of one hundred and seven days, which is at the rate of \$317.52 per week or \$45.36 per day or \$1.89 for each hour of every twenty four hours that the patients of the town were under treatment

Naturally, it makes me feel that the town of Winchester got out of the situation rather easily as compared with Mansfield

But seriously, does it not make one view the increased tendency toward State Medicine with a good deal of apprehension?

Yours very truly,

FRANK H. DUNBAR, M.D.

86 Rumford Avenue,
Mansfield, Mass

RECENT DEATHS

COOK—SNOW PARKER FREEMAN COOK, M.D., of 111 Main Street, Gloucester died at the Addison Gilbert Hospital, April 6 1934. Dr Cook was born in Liverpool, N.S., in 1861 and his premedical education was acquired at the Acadia College, Wolfville, N.S. He graduated in medicine from the University of Pennsylvania School of Medicine in 1886 and practiced in Gloucester for about forty years.

Dr Cook joined the Massachusetts Medical Society in 1893. His practice was devoted to diseases of the nose, ear and throat. He was a member of

the Tyrian Lodge of Masons and a director of the Cape Ann Savings Bank

TOWNSEND—CHARLES WENDELL TOWNSEND, M.D., of Boston and Ipswich, died in Boston on April 3, 1934, at the age of seventy five years. Born in Boston, the son of Thomas Davis Townsend and Frances Barnard Smith Townsend, he prepared for college at Noble's School and was graduated from Harvard College in 1881 and from Harvard Medical School in 1885. He had in the past served on the staffs of the Massachusetts General, the Boston Lying In and the Children's Hospitals, and the Seashore Home for Sick Children at Winthrop.

Dr Townsend was best known, however, as an ornithologist, having written many books and papers on the birds of various sections of the country. Surviving him are his son, Charles Townsend, of Boston, three daughters, Miss Gertrude Townsend of Boston, Mrs Hale Sutherland of Bethlehem, Pennsylvania, and Mrs Wendell Taber of Boston, a brother, William S. Townsend, and three grandchildren.

KIRK—LUCY A. KIRK, M.D., of 637 Dudley Street, Dorchester died at her home on April 5 1934. She was born in Dorchester, Massachusetts, in 1859, the daughter of Joseph and Eleanor Hall (Stimpson). Kirk. She was graduated from the Training School for Nurses at the Hartford Connecticut, Hospital in 1883 and received her M.D. degree from the Boston University Medical School in 1893. She served on the staff of the Boston Homoeopathic Dispensary from 1894 to 1902 and was a member of the Massachusetts Homoeopathic Medical Society, the Massachusetts Surgical and Gynecological Society and the American Institute of Homoeopathy. Dr Kirk is survived by a sister, Miss Eleanor Hubbard Kirk.

O'TOOLE—THOMAS HENRY O'TOOLE, M.D., died at his home in Norwood on April 4 1934 at the age of sixty two. Born in Clinton he moved to Philadelphia where he received his early education, later being graduated from Johns Hopkins University, and Jefferson Medical College of Philadelphia in 1897.

Dr O'Toole settled in Norwood thirty five years ago for the practice of medicine.

He joined the Massachusetts Medical Society in 1922 and was a Fellow of the American Medical Association. He was a member of the Norwood Lodge of Elks, the Knights of Columbus and the Foresters.

He is survived by his widow, a daughter, Mrs Marie Heffernan, and a son, Dr Thomas H. O'Toole of Norwood.

OBITUARY

WILLIAM HOWE MERRILL, M.D.

William Howe Merrill, M.D. of Lawrence, Mass., was born in Newport, Me. April 3, 1864 the son of Phineas and Elizabeth (George) Merrill. He at

an increased demand are (a) blood loss due to hemorrhage or fetal requirement (b) infections, (c) chemical agents, (d) idiopathic elements such as are seen in hemolytic jaundice, erythroblastemia, and sicklelema. The demand may be normal but the marrow hypoactive as in (a) specific malnutrition with deficiency of liver extract, iron, or vitamin C, (b) toxic inhibition by infections and azotemia as well as chemical agents.

In his consideration of the anemia of pregnancy the speaker stated that it was rare to find pregnant women with less than 45 per cent hemoglobin and less than 25 million erythrocytes. In a long series of cases he found less than 74 per cent hemoglobin in 82 per cent of the ward patients while 68 per cent of the private patients exhibited a like deficiency.

The anemia of pregnancy is a hypochromic anemia with low color index due to a deficiency of iron resulting from low intake, failure to utilize, or loss of iron by hemorrhage or to the fetus. The gastric acidity very frequently becomes reduced to zero in 50 per cent of the cases and all have some diminution of this factor.

The hemoglobin is not made up for months or years after the pregnancy unless active therapy is instituted. The lower the percentage of hemoglobin the more liable the patient is to develop complications because of poor health due to the anemia.

Diet is important, for the speaker found that in those patients with normal acidity and a good diet, only 5 per cent showed an anemia, those with low acid and a poor diet were anemic in 12 per cent of the cases, while with no acid and a good diet 18 per cent showed definite evidence of hemoglobin lack.

The infants of women with lowered hemoglobin have as much of this material at birth as those of normal women, but such children do not store enough iron for the first year of life. Those children whose mothers are treated before the birth of the infants are as well off as the children of normal women.

Abnormal leukocyte counts are often seen in infants of mothers with low hemoglobin. During pregnancy there is an added requirement of blood building material which the mother must provide for the fetus. Consequently her diet should be adequate in protein and iron-containing foods.

Treatment of the disease may be carried on through the use of 90 grains of iron and ammonium citrate daily. In those women with an acidity cure may be brought about by the administration of five ounces of normal gastric juice with beef steak daily in addition to the iron. If pernicious anemia accompanies the hypochromic anemia 10 cc. of liver extract should be given intramuscularly twice weekly in conjunction with the iron. The infants of anemic mothers should have one-sixth of the dose of iron taken by the mother.

In closing Dr. Strauss placed particular emphasis

on the fact that the anemia of pregnancy may be prevented by the daily administration of 30 grains of iron and ammonium citrate during the entire course of the pregnancy.

FAULKNER HOSPITAL CLINICAL MEETINGS

On Thursday afternoon, April 5, 1934, at 5 00 P.M. the regular monthly meeting of the Staff of the Faulkner Hospital was held at the hospital.

Two of the cases which had come to autopsy during the month were discussed.

One was a case of pulmonary tuberculosis, which was complicated by difficulty in swallowing. This was pronounced, but still food was able to enter the stomach. X-ray studies showed a very definite obstruction throughout the lower half of the esophagus. The roentgenologist felt that this obstruction was more from pressure outside and ulceration in the wall of the esophagus than from neoplasm. It was felt by others that a neoplasm of the esophagus was more likely as it was quite unusual for a tubercular process in the mediastinum to obstruct the esophagus. The evidence of activity of the pulmonary tuberculosis increased and the patient died. At autopsy there was an extensive tubercular process in the lungs which was spreading and presumably caused death. Surrounding the esophagus there was what amounted to a cold abscess which had invaded the wall of the esophagus. There was no evidence of neoplasm.

The other case was one in which there were threatening abdominal symptoms which progressed rapidly in the course of two days with the development of a tender mass in the right upper quadrant and a leucocytosis. It was felt that the only chance for the patient was an exploration although the outlook appeared dubious. At exploration evidence of bleeding into the mesentery of the upper intestinal tract and throughout the tissues surrounding the pancreas and duodenum was evident. The patient died shortly after the operation and a leaking aneurysm of the abdominal aorta was found.

As Dr. Young was forced to be absent from town, the discussion about gallbladder problems was not given but in place of that Dr. Edward D. Churchill gave a most interesting talk on "Recent Advances in Thoracic Surgery." He discussed the two conditions in which surgery of the lung has made distinct advances, namely, chronic bronchiectasis and cancer of the lung. He called attention to the fact that there are two types of bronchiectasis, one in which there is diffuse bronchiectasis scattered generally throughout both lungs. In these cases surgery is of no value. The other type consists in a localization of the bronchiectasis in one lobe. In these cases it is possible to remove the infected lobe. These cases in which the bronchiectasis is localized in one lobe usually present one of two sets of symptoms. In one case there is a profuse foul sputum without much tendency to bleed; in the other type there is not so much sputum but a tendency for repeated

REPORTS AND NOTICES OF MEETINGS

THE NORFOLK DISTRICT MEDICAL SOCIETY

A meeting of the Norfolk District Medical Society was held on Tuesday evening, January 30, 1934, at 8 15 P.M. in Roxbury Temple with Dr. Alexander S. Begg presiding. The guest speakers were Dr. William Dameshek of the Beth Israel Hospital, Boston, and Dr. Maurice B. Strauss of the Boston City Hospital.

Dr. Dameshek's topic was "Certain Disorders of the White Blood Cells" and Dr. Strauss discussed the "Etiology of the Anemias."

In speaking of the origin of the blood cells, Dr. Dameshek said that the corpuscular elements in the peripheral blood stream have their origin from three sources. The bone marrow is the chief and most important of these. From it arise all the erythrocytes and platelets, and 70 per cent of the leukocytes. The lymphocytes are produced by the lymph nodes throughout the body, and the reticulo-endothelial system, found in the spleen, liver, lymph nodes and bone marrow, furnishes the monocytes.

The bone marrow white blood cells pass through many stages from the primitive to the mature leukocytes, viz., myeloblast, promyelocyte, myelocyte, young metamyelocyte, band form of metamyelocyte and the polymorphonuclear leukocyte.

The Schilling Hemogram is concerned with the determination of the different forms of polymorphonuclear cells in the peripheral blood stream beginning with the young metamyelocyte and continuing through the band forms and mature "poly." The bone marrow reacts to infection in such a way as to put out as many mature forms as possible. Then band forms appear, followed by still younger forms and, if the infection is very severe, myelocytes get into the peripheral blood stream. In a differential cell count the polys may be subdivided in the Schilling Hemogram and thus the prognostic severity of the infection is determined. Shifts give much more information than the ordinary differential as to the progress of the process. In shifts to the left we see young forms, in those to the right older forms are in evidence. Most infections, especially with pyogenic organisms, act in this way.

Agranulocytosis is a cyclic fall in the white blood cell count due to an intrinsic disorder of the white blood cell forming organs and which may be related in some cases to the menstrual cycle. After the leukocyte count has fallen very low, areas of necrosis appear in the throat and buccal mucous membranes because of lack of resistance. Nucleic acid derivatives have been found to stimulate the bone marrow and are used to treat the disease. Pent nucleotide in 10 cc ampoules is given intramuscularly twice daily. The white count will begin to rise in three to five days and goes up in the course of a week.

The speaker referred to the late reaction of lymphocytes to infection and suggested that the

term infectious lymphocytosis, or better still, glandular fever, be used for the disease now so commonly called infectious mononucleosis.

Monocytosis is seen in subacute and chronic infections such as tuberculosis and lues. In tuberculosis the monocyte-lymphocyte ratio becomes elevated and is of value chiefly in children who are anergic. In adult tuberculosis, however, the Schilling Hemogram has greater prognostic significance.

The proliferative disorders of the white blood cells are termed leukemia or preferably leukosis and may be of two types: leukemic, in which the white count is high, and aleukemic, in which the count is normal or below. Leukosis may be myelogenous, lymphatic or monocytic. Under the term myelosis is included acute leukemia, in which the cells are very immature, and chronic leukemia, in which the cells are more mature and an enlarged spleen is a prominent feature.

Most cases of leukosis seen are of the aleukemic type and have been variously misdiagnosed as

- 1) Obscure anemia or pernicious anemia because of the accompanying anemia which is frequently of the macrocytic type. It does not respond to liver.
- 2) Agranulocytosis, because of the leukopenia which is frequently down to 1000-2000. It does not react to pentnucleotide, however.
- 3) Purpura hemorrhagica, due to the presence of diminished platelets resulting from the destruction of the platelet-forming mechanism and the tendency of the patients to bleed.
- 4) Aplastic anemia, in view of the combination of the anemia, leukopenia, and diminished platelets.

Among the localized disorders may be mentioned the rapidly growing myelosarcoma, lymphosarcoma, and reticulosarcoma.

Referring to the diagnosis in cases presenting as their chief complaint or finding a group of enlarged lymph glands in the neck, the speaker emphasized the importance of a good history with particular attention to such features as itching, sweating, loss of weight, and pallor. This should be followed by a careful physical examination, especial care being devoted to all lymph glands, spleen, liver, supra-cardiac dullness and malignant disease of the sinuses and postpharyngeal area. Chief among the laboratory procedures to be done in such cases are urine for Bence-Jones protein, blood smear, chest x-ray, B.M.R., which is frequently elevated in Hodgkin's disease and lymphatic leukemia and the biopsy which is the most important of all. An occasional case of Hodgkin's disease can be treated successfully by complete surgical removal of cervical lymph glands, provided, of course, there is no disease elsewhere.

Dr. Strauss said that the causation of anemia is related intimately to the blood supply and the demand for it. Among the factors which bring about

NEW ENGLAND HEART ASSOCIATION

The next meeting of the New England Heart Association will be held in the Assembly Room of the House of the Good Samaritan, Monday, April 23, at 8 15 P.M.

All members of the New England Heart Association and interested physicians are invited to attend
PAUL W. EMERSON, M.D. Secretary

GREATER BOSTON MEDICAL SOCIETY

There will be a joint meeting of the Greater Boston Medical Society and the staff of the Beth Israel Hospital.

Time Tuesday April 17 1934 at 8 15 P.M.

Place Beth Israel Hospital, Boston Mass

Speaker Frank H. Laher, M.D. Surgeon in Chief The Laher Clinic Boston

Subject The Management of Cholelithiasis and Biliary Tract Infections

Discussion Harry Linenthal M.D., Maurice E. Barron M.D. Carl Bearnse M.D.

D. B. STEARNS M.D. Secretary

THE NEW ENGLAND ROENTGEN RAY SOCIETY

The next meeting will be held at the Beth Israel Hospital Boston Mass Friday night April 20 1934, at 8 15 P.M.

SCIENTIFIC SESSION

Dr Sammel A. Robins will present the following program

I Roentgenological Changes in the Heart After Total Thyroidectomy 10 Minutes Dr David Davis Dr Herrman L. Blumgart.

II. Protracted Irradiation in Carcinoma of the Larynx. 10 Minutes Dr Harry F. Friedman.

III. Report of Case of Schuller-Christian Disease 10 Minutes Dr Charles Liebman.

IV The Value of Lateral Views of the Rectum 10 Minutes Dr S. William Altman

V Roentgenological Exploration of the Biliary Ducts with Lipiodol. 10 Minutes Dr Louis Hermonson

VI Urethrography 10 Minutes Dr M. Leopold Brodny

VII. Cystography and the Prostate 10 Minutes Dr Samuel A. Robins

Three minutes will be allowed for discussion on each paper

The usual dinner will be held at the Harvard Club

ISAAC GERBER, M.D. President

201 Waterman Street, Providence R. I.

THOMAS R. HEALY, M.D., Secretary

370 Marlborough Street, Boston Mass

PHI DELTA EPSILON FRATERNITY

POSTPONEMENT OF MEETING

The meeting of the Phi Delta Epsilon Fraternity of Boston University School of Medicine previously

announced for April 16 has been postponed. Further announcement will be made in a later issue

NEW ENGLAND PHYSICAL THERAPY SOCIETY

NOTICE OF CHANGE OF TIME AND PLACE OF APRIL MEETING

The regular April meeting of the New England Physical Therapy Society will be postponed to Tuesday evening April 24. It will be held at the Psychiatric Clinic Building Boston State Hospital. The program will be published next week.

ARTHUR H. RING, M.D. Secretary

THE WALDEN MEDICAL SOCIETY

The next meeting will be held on April 17 1934 at Walden Electric Company Hall at 8 30 P.M.

Speaker Edwin Locke, M.D.

Subject Hypertension Its Cause and Treatment

A. H. WAFER, M.D. Secretary

SOCIETY MEETINGS, CONGRESSES AND CONFERENCES

April 12—Massachusetts Tuberculosis League will hold its annual meeting at the Hotel Statler Boston beginning at 11 A.M. in Parlor B on the mezzanine floor.

April 12—Massachusetts General Hospital will hold a Staff Clinical Meeting in the Moseley Memorial Building at 8 15 P.M.

April 13—William Harvey Society will meet in the auditorium of the Beth Israel Hospital at 8 P.M.

April 13—Massachusetts Memorial Hospitals. See page 828.

April 13, 20 and 27—Salmon Memorial Lectures. See page 443 issue of February 22.

April 14—New England Association of the Johns Hopkins Alumni will meet at the University Club Boston Dinner at 7 P.M.

April 16—Boston Medical History Club. See page 828.

April 16—Boston University School of Medicine to Conduct a Clinical Meeting at Boston City Hospital in the Cheever Amphitheatre at 11 o'clock.

April 16 20—The American College of Physicians will hold its Eighteenth Annual Clinical Session in Chicago at the Palmer House. For information write Mr. E. R. Loveland, Executive Secretary, 133-135 South 36th Street, Philadelphia Pa.

April 17—South End Medical Club will meet at the office of the Boston Tuberculosis Association 554 Columbus Avenue Boston at 12 noon.

April 17—Lawrence Cancer Clinic. See page 828.

April 17—Greater Boston Medical Society. See notice elsewhere on this page.

April 17—New England Ophthalmological Society. See page 828.

April 17—Malden Medical Society. See notice above.

April 20—New England Roentgen Ray Society. See notice elsewhere on this page.

April 23—New England Heart Association. See notice elsewhere on this page.

April 23 May 5—Physicians Art Exhibit at the Boston Medical Library 8 Fenway.

April 24—New England Physical Therapy Society. See notice above.

April 27—New England Society of Psychiatry will meet at the Boston State Hospital Dorchester Center Mass. at 1 P.M.

April 30—The American Board of Dermatology and Syphilology Examinations for Certificates. Address Dr. C. Guy Lane 416 Marlboro Street, Boston for details.

May 3—Faulkner Hospital Clinical Meeting. See page 828.

May 14, 15, 16, and 17—Thirtieth Annual Meeting of the National Tuberculosis Association. For details apply to the National Tuberculosis Association, 450 Seventh Avenue New York City.

hemorrhages which may often be serious. In addition to the discomfort which these people are subjected to from the bronchiectasis, there is always the danger of the spreading of the infection to other parts of the lung. He called attention to the value of lipiodol injections as a diagnostic procedure in regard to the operability of the case and emphasized the danger of using lipiodol as a diagnostic procedure in all cases. He reports that lipiodol dropped into the trachea just below the vocal cords is as satisfactory as lipiodol introduced through the bronchoscope. He called attention to the importance of a lateral x-ray of the chest in localizing the lesion. In certain instances postural drainage is helpful in these cases but never cures them. Postural drainage should be explained in detail to the patient. In his experience medicines, vaccines and pneumothorax have never cured the condition. The results of surgery in these cases in which the bronchiectasis has been limited to one lobe have been very gratifying. It is usually not a safe procedure in cases above 40 to 45 years of age. The social aspects of the patient are of importance, because if the patient has no dependents radical surgery is more justifiable than if there are dependents, for although the condition is eventually a fatal disease the patient may live for many years.

He then described the technique of operation calling attention to the fact that first a phrenicectomy is done, then an operation to remove the adhesions around the involved lobe and scarring of the rest of the pleura on that side, and finally the third stage of the operation in which the lobe is removed. Dr. Churchill has never seen a phrenicectomy produce a cure, he has seen the second stage of the operation cause distinct improvement, but in practically all cases the third stage is indicated.

In regard to cancer of the lung he reported that there are definite cases on record in which a whole lung has been excised with success and therefore we can no longer say that cancer of the lung is a fatal disease but must make a careful study of each case of cancer of the lung from the point of view of whether it is operable.

The next meeting will be held at the Faulkner Hospital on Thursday afternoon May 3, 1934, at 5 00 P M. In addition to the usual clinical pathological conference on the cases which have come to autopsy during the month, Dr. William W. Howell will give a short discourse on "The Infant's and Child's Resistance." All physicians who are interested are cordially invited.

HARVARD MEDICAL SOCIETY

POSTPONEMENT OF MEETING

The meeting of the Harvard Medical Society scheduled for April 24, to be addressed by Dr. James C. White has been postponed to May 8. Notice with title will appear later.

JOHN HOMANS, M D, *Secretary*

NORFOLK DISTRICT MEDICAL SOCIETY

A regular meeting of the Society will be held in the Hotel Kenmore, Wednesday evening, April 18, 1934 (note change of date), at 8 15 P M. Telephone Kenmore 2770.

Business

Reports from Committees

Incidental business

Communications

"The Practice of Public Health by the Private Practitioner" Dr. Charles F. Willinsky

Collation

FRANK S. CRUICKSHANK, M D, *Secretary*

MASSACHUSETTS MEMORIAL HOSPITALS

The regular monthly meeting of the Surgical Section will be held in the Trustees Room of the Hospital on Friday, April 13, 1934, at 12 o'clock noon.

Dr. Henry M. Pollock, Superintendent of the Hospital, will address the members on "Getting Together."

MILO C. GREEN, M D, *Secretary*

BOSTON MEDICAL HISTORY CLUB

ANNUAL MEETING

Sprague Hall, 8 The Fenway

Monday, April 16, at 8 15 P M

"Ulrich von Hutten and Neurosyphilis" Merrill Moore, M D

"The Perilous Adventure of Dr. Ball" Ralph C. Larrabee, M D

Illustrated by Stereopticon

Light refreshments after the meeting

JAMES F. BALLARD, *Secretary*

Physicians' Art Exhibit at the Boston Medical Library, April 23 to May 5. Admission free.

NEW ENGLAND OPHTHALMOLOGICAL SOCIETY

The next meeting of the New England Ophthalmological Society will be held at the Massachusetts Eye and Ear Infirmary, 243 Charles Street, Boston, on Tuesday, April 17, 1934.

PROGRAM

- 9 00 A M Clinic and Operating room
- 11 30 A M Neuro-Ophthalmological Conference
- 2 00 P M Clinico-Pathological Conference
- 3 00 P M Lecture and demonstration on Stereoscopic technic Prof. B. W. Kelly

EVENING PROGRAM

8 00 o'clock

Cases: New Intracapsular Suction Cup Dr. Fred S. Thorne

Paper: Ocular Complications in Diabetes Dr. J. Herbert Waite, Dr. William Beetham

Discussion: Dr. Elliott P. Joslin

BENJAMIN SACHS, M D, *Secretary*

The New England Journal of Medicine

VOLUME 210

APRIL 19, 1934

NUMBER 16

NEW ENGLAND SURGICAL SOCIETY

CANCER OF THE BREAST END-RESULTS*

Massachusetts General Hospital 1921, 1922, and 1923

BY ROBERT B. GREENOUGH, M.D.,† AND GRANTLEY W. TAYLOR, M.D.‡

HEREWITH is presented the fourth of a series of reports on the end-results of treatment of cases of cancer of the breast at the Massachusetts General Hospital covering all cases which entered the Hospital in the calendar years 1921, 1922 and 1923.

The first report of the series¹ was published in 1907, and covered the years 1894 to 1904. In this first report a three-year minimum period was employed, as was customary at that time (although the average period of observation after operation was nearly seven years), and untraced cases were omitted from consideration.

In 1921 another report (Number two) was published² recording the results in the series of cases which entered the hospital in the period from August, 1911 to April, 1914. In this series the five-year minimum period was adopted for end-results. At this time also a formula was devised for recording end-results in cancer cases which was designed to give a complete and balanced account of all cases entering the hospital in a given period, in order that the figures obtained in one hospital might more fairly be compared with those of another institution. This report covered a period during which, by special assignment, almost all cases of breast cancer were allotted to the care of the surgeons who presented the report.

In 1926, a third report was published³ giving the results in the cases of carcinoma of the breast for the years 1918, 1919 and 1920. In this series again a five-year minimum end-result period was employed, but untraced cases were omitted from consideration. In this report the employment of prophylactic x-ray treatment as an adjunct to surgery was discussed, and the significance of the histological grading of breast cancer was presented.

The current report (Number four) covers all of the cases of breast cancer which were admitted to the Massachusetts General Hospital in the calendar years 1921, 1922 and 1923, two

hundred and thirty-eight in number. Twenty-three of these cases were in the private ward and from the attending surgeons, data sufficient for classification and end-results were not obtainable. Nine were reëntries (duplicates) and two cases, although entered as cancer, were proved by pathological examination not to be cancer at all. One case received no treatment and six died of causes other than cancer before the lapse of the five-year period⁴. These cases have been deducted from the 238, leaving 197 cases for study of which 177 were primary cases and 20 recurrent after previous operation.

In the following tables and discussion, the term "Cure" applies to a case which had pathologically proved cancer of the breast and which has shown no evidence of a recurrence for a minimum period of five years after operation. Cases which died within the five-year period without evidence of recurrent disease are omitted as inconclusive. Cases which died after five years without evidence of disease are included as "cures". Cases which died after five years with recurrent disease are classified as failures.

The classification of cases adopted by the American College of Surgeons has certain definite advantages for recording the degree of development of the disease, and the 197 cases of this series have been tabulated in that form.

The No 1 indicates primary cases, No 2 indicates recurrence after radical operation and No 3 indicates recurrence after incomplete operation. The letters indicate the extent of disease, as follows:

- A. Process confined to the breast, axillary nodes not involved.
- B. Axillary nodes doubtful.
- C. Axillary nodes involved.
- D. Supraclavicular nodes involved.
- E. Remote metastases.
- F. Other breast involved.

This tabulation shows five-year "cures" in 29 per cent of all cases entering the hospital. It includes primary and recurrent cases, those treated by operation, whether radical or palliative, and those not operated on at all, a salvage of nearly one in three of all cases. One hundred and seventy-seven primary cases, including advanced and inoperable cases, were

*Read before the New England Surgical Society, September 29, 1933, at Boston.

†Greenough, Robert B.—Consulting Surgeon, Massachusetts General Hospital and Collis P. Huntington Memorial Hospital, Boston, Massachusetts. Taylor, Grantley W.—Assistant Surgeon to Out Patients, Massachusetts General Hospital. For records and addresses of authors see "This Week's Issue" page 51.

May 26, 27, 28, and 29—The American Association on Mental Deficiency Details may be obtained from the Secretary, Dr. Groves B. Smith, Godfrey Illinois

June 12—American Heart Association will meet at 9 30 A.M. at the Cleveland Hotel, Cleveland, Ohio

July 24 31—The IVth International Congress of Radiology will be held in Zurich under the presidency of Professor H. R. Schnitz. General Secretary Dr. H. E. Walther, Gloriastrasse 14, Zurich

September 3 6—American Public Health Association at Pasadena, California. Dr. J. D. Dunshee, Chairman, Local Committee on Arrangements

September 4, 5, 6—International Union Against Tuberculosis. For information address the National Tuberculosis Association, 450 Seventh Avenue, New York City

DISTRICT MEDICAL SOCIETIES

ESSEX SOUTH DISTRICT MEDICAL SOCIETY

Thursday, May 3—Censors Meeting, at Salem Hospital 3 30 P.M.

Tuesday, May 8—Annual Meeting. Salem Country Club. Forrest Street, Peabody. Dinner at 7. Speaker to be announced. Subject to be announced.

RALPH E. STONE, M.D., Secretary
221 Cabot Street, Beverly, Mass.

FRANKLIN DISTRICT MEDICAL SOCIETY

The next meeting will be held on the second Tuesday of May at the Weldon Hotel, Greenfield, at 11 A.M.

CHARLES MOLINE, M.D., Secretary
Sunderland, Mass.

MIDDLESEX EAST DISTRICT MEDICAL SOCIETY

The next meeting will take place in May (2nd Wednesday) at Winchester.

ALLAN R. CUNNINGHAM, M.D., Secretary
76 Church Street, Winchester, Mass.

MIDDLESEX NORTH DISTRICT MEDICAL SOCIETY

Meeting will be held on April 25

T. A. STAMAS, M.D., Secretary
226 Central Street, Lowell, Mass.

MIDDLESEX SOUTH DISTRICT MEDICAL SOCIETY

May 3—Censors Meeting will be held at the Boston Medical Library, 8 Fenway, Boston.

NORFOLK DISTRICT MEDICAL SOCIETY

April 18 (Note change of date)—Hotel Kenmore 8 30 P.M. Special Business Meeting. See page 828.

May—Annual Meeting. Time, place and program to be announced.

FRANK S. CRUICKSHANK, M.D., Secretary
1695 Beacon Street, Brookline, Mass.

NORFOLK SOUTH DISTRICT MEDICAL SOCIETY

May 3—12 noon at Norfolk County Hospital. Annual Meeting. Election of Officers.

N. R. PILLSBURY, M.D., Secretary
Norfolk County Hospital, South Braintree, Mass.

SUFFOLK DISTRICT MEDICAL SOCIETY

April 25—Annual Meeting at the Boston Medical Library. Election of Officers. Scientific Program. Titles and speakers to be announced.

The Medical Profession is cordially invited to attend this meeting.

JAMES H. MEANS, M.D., Vice-President.
GEORGE P. REYNOLDS, M.D., Secretary,
311 Beacon Street, Boston, Mass.

WORCESTER DISTRICT MEDICAL SOCIETY

Meeting to be held on Wednesday as follows

May 9—Annual Meeting. Time and place to be announced later.

ERWIN C. MILLER, M.D., Secretary
27 Elm Street, Worcester, Mass.

BOOK REVIEWS

The Health and Turnover of Missionaries By WILLIAM G. LENNOX. Published by the Advisory Committee, New York City. The Methodist Book Concern, 1933. 217 Pages.

Dr. Lennox, who has long been interested in medical missionary work and has spent many years in China, has recently compiled for the Missionary Societies of America a useful statistical study, which now appears in book form. When one realizes that there are more than 29,000 missionaries in foreign

lands and that during the course of a single year nearly \$70,000,000 is expended for the upkeep of this service, there are many problems presented which justify investigation. It is brought out by this study that many missionaries leave their work just at the time when they are becoming valuable to the organization supporting them. In other words, to use the slang of the time, the "turnover" is very high. In order to present the facts regarding this, Dr. Lennox has tabulated and charted statistics covering a period of many years. From the medical point of view, the causes of death from infectious and tropical diseases and the large number of missionaries who withdraw from service on account of functional nervous disease are the outstanding results of the investigation. The author recommends the establishment of a central medical department with full-time physicians who would conduct examinations, direct laboratory work, and handle medical records of all the missionaries for eight or ten of the largest Boards, with offices in New York. By this method it is hoped to control the medical missionary service in a more efficient manner than has been possible in the past.

The Modern Treatment of Syphilis By JOSEPH EARLE MOORE. Published by Charles C. Thomas, Baltimore. 535 Pages. Price \$5.00.

In general, this book provides information in as simple terms as possible as to what can be done for patients with various types of syphilis and as to what results may be expected. It is written largely from a background of the author's own experience, but the work of other investigators has not been neglected. While a thorough review of literature is not attempted, important contributions are utilized, especially those of the Coöperative Clinical Group composed of the chiefs of the syphilis clinics of the University of Pennsylvania, the Mayo Clinic, the University of Michigan, Western Reserve University, Johns Hopkins University and representatives of the United States Public Health Service. Bibliographies of source material follow each chapter.

We have here a detailed and scholarly, yet simple presentation of the best methods of treatment and their attainable results, which should interest general practitioner and specialist, from the pen of a well-known investigator, an able teacher and clinician.

Les Troubles de L'Élimination Urinaire de L'eau By JULES COTTE. Published by Masson et Cie. 260 Pages. Price 32 fr.

This book on the physiologic, pathologic, and clinical study of water elimination in renal disease offers nothing new to the internist. If the author of this work attempted to clarify the maze of contradictory work in this field and apply some of it practically, the reviewer feels that he has surely failed. As a matter of fact, Widal and his associates many years ago reviewed the subject very thoroughly.

for the previous series are presented for comparison

TABLE III

1904 (3 yrs)	1914 (5 yrs)	1920 (5 yrs)	1923 (5 yrs)
16%	32%	30%	36%

It is of interest to note that during the three-year periods ending in 1914 and 1923, Breast Cancer was a special assignment while in the 1904 and 1920 series cases were distributed over the regular surgical services

There were seventeen incomplete or palliative operations in this series with four five-year "cures" or 23 per cent. In fifteen cases no operation was attempted and the patients were given x-ray treatment. None of these patients survived five years. While the fact is already well established it is to be emphasized that nothing short of the complete radical operation can be expected to give the patient the chance to which she is entitled to be cured of cancer of the breast.

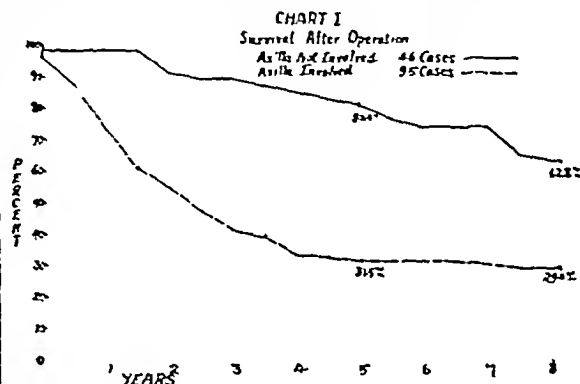
The classical measurement of the degree of extension of cancer of the breast is the involvement of the axillary lymph nodes as shown by pathological examination of the tissue. The clinical estimate of axillary involvement is, however, erroneous in a considerable proportion of cases. Thus in this series 16 out of 50 in the 1-A group were thought on clinical examination to have involved axillary nodes which were proved on pathological examination to be free from disease (32%). On the other hand 24 out of 111 (22%) showed no clinical evidence of enlarged nodes although on pathological examination after removal cancer proved to be present.

It is true also that cancer in certain regions of the breast, notably the median hemisphere and the upper inner quadrant, may extend to the internal mammary chain of nodes within the chest or directly to the supraclavicular nodes before reaching those in the axilla. In spite of these inaccuracies, however, the involvement of axillary nodes is still our most valuable measure of the extent of the disease.

In this series there were 50 cases in the 1 A group (axillary nodes not involved) with 31, or 62 per cent five-year cures. There were 111 cases in the 1 C group (axillary nodes involved) with 23, or 21 per cent five-year cures. The six cases in which the supraclavicular nodes were enlarged gave no cures (in spite of one attempt to dissect the supraclavicular region) and the cases of remote metastases and the one case of bilateral involvement were also failures. The postoperative survival of the 1 A and 1 C cases is shown in chart I.

We have some reason to doubt the accuracy of clinical data as regards the duration of cancer of the breast. In the present series of cases

preoperative duration of over two years was arbitrarily reduced to two years. On this basis the average preoperative duration for 107 cases treated by radical operation was found to be 82 months. Of this number 78 were failures with an average preoperative duration of 91 months. There were 29 five-year cures with an average preoperative duration of 57 months. Among the cured cases, however, there were at least three patients who reported a preoperative duration of two years or more. In a previous series (1918-1919-1920) it was found that in 39 cases with greater than the average duration there were 10 cures (26%) while in 52 cases with less than the average duration there were 12 cures (23%). In the present series the average preoperative duration in the



1 A cases (nodes not involved) was 72 months. The cures in this group averaged 62 months' duration and the failures 87 months' duration. The average preoperative duration in the 1 C group (axillary nodes involved) was 87 months. The cures in this group averaged 57 months and the failures 93 months. In view of these figures we must admit that however important the duration of the tumor may be in the individual case its value in group prognosis is limited.

It is frequently suggested that cancer of the breast has a much graver prognosis in young women than in older women. When our cases are divided into two groups, those over 50 years of age and those less than 50 (the approximate mean age of the group) it is found that the cures are respectively 34.5 per cent and 32.8 per cent. In a series as small as this one, the difference is not significant. When the cases are divided into three groups, however, those under 45 years of age, those from 45-60 inclusive, and those over 60, the percentage cures are respectively 22.2 per cent, 40 per cent and 45 per cent. About half the cases fall into the middle group and roughly a quarter each into the young and old groups. These figures therefore do emphasize strikingly the relatively greater gravity of the disease in younger women. The pathological classification of breast can-

TABLE I

	1894 1904	1911 1914	1918 1920	1921 1923
A Total Entries	613	115	175	238
B Omit reentries (duplicates)	80	8	7	9
B i Omit not carcinoma			2	2
C Omit recur from previous op	65	4	15	20
C i Omit private ward cases (no data)			17	23
C ii No treatment				1
D Cases available for study of operability, mortality	468	103	134	183
E Radical operations	360	74	100	148
F Incomplete operations	56	20	24	20
G No operation	52	9	10	15
H Operative deaths	15	0	4	5
I Operative mortality	3.6%	0	3%	3%
J Operability—rad ops	77%	72%	75%	80%
K Operability—all ops	89%	91%	91%	91%
M Omit untraced	38	5	23	0
N Omit died within 5 yrs without recurrence	2	3	4	6
O Primary cases for end result data	428	95	107	177
P Radical operations	320	69	76	145
Q Incomplete operations	56	17	21	17
R No operation	52	9	10	15
S No cases—alive and well	64	22	21	50
T No cases died without recur (over 5 yrs)	7	1	0	6
U No 5 yr 'cures'—all ops	71 (3 yrs)	23	21	56
V No 5 yr 'cures'—rad ops	67 (3 yrs)	22	21	52
W % 5 yr 'cures'—all ops	19%	27%	21%	35%
X % 5 yr 'cures'—rad ops	21%	32%	27%	36%
X i % 5 yr 'cures'—rad ops IABC Group			30%	36%
Y % 5 yr 'cures'—glds not inv		56%	54%	62%
Y i % 5 yr 'cures'—glds involved		24%	23%	21%
Z % cases remaining free from local recurrence after radical operation	1894 1904 52%	1911 1914 69%	1918 1920 58%	1921 1923 78%

32 per cent five-year successes, and primary cases of the so-called operable class (no disease evident beyond the axilla) gave 34 per cent cures. In the early favorable cases (axillary glands not found to be diseased on pathological examination) the five-year "cures" are 62 per cent.

TABLE II

	Cases	Cures	Per Cent
1 A Group—Axilla not involved	50	31	62
1 B Group—Axilla doubtful	2	2	
1 C Group—Axillary nodes involved	111	23	21
1 A B C Group—Operable Cases	163	56	34
1 D Group—Supraclavicular Nodes involved	6	0	
1 E Group—Remote metastasis	7	0	
1 F Group—Other breast involved	1	0	
1 D E F Group—Inoperable Cases	14	0	
Total Primary Cases	177	56	32
2 Recurrent after Radical Operation	11	0	
3 Recurrent after Palliative Operation	9	0	
Total All Entries	197	56	29

There were one hundred and forty-five radical operations in this series, by which is understood the removal of the whole breast, the skin over the breast, both pectoral muscles, the axillary contents to the clavicle, and the deep fascia from sternum to latissimus and from clavicle to epigastrium. These radical operations yielded fifty-two or 36 per cent five year "cures."

The clinical criterion of operability has been a tumor movable on the chest wall with at most small movable axillary metastases. We have gradually narrowed the field of operability in the course of the years covered by these reports. Skin nodules, large or fixed axillary nodes, a swollen arm, and supraclavicular fullness have been recognized as contraindications to operation. Routine preoperative x-ray study of the bones and chest for determination of the presence of remote metastases was not followed in all cases of this series although it has since then come into general use. Care in history and examination of the patient, and clinical alertness in interpreting backache or dyspnea have gradually become more common.

The so-called "inflammatory" type of carcinoma of the breast is now generally recognized as not curable by operation. The development of effective palliative treatment in the form of radiation has made us less willing to recommend operation in poor risk patients. These factors alone even without consideration of such improvements in operative technique as we believe developed prior to this period, should entitle us to show progressive improvement in our cures by operation in successive series of cases. It is probable that with greater attention to these factors, many of the deaths which occur within the first six months after operation could be avoided.

The figures for the percentage of five year "cures" from radical operation in operable cases (1A—1B—1C—A C S Classification)

in general very early cancers, and that the curability is high in this group. Certainly the figures give no ground for supposing that exploration is prejudicial to cure. We are strongly of the belief, however, that exploration or excision of a doubtful breast tumor should never be undertaken unless facilities for a frozen section diagnosis, and for the completion of the radical operation at the same sitting, are available.

In addition to radical operation, 125 cases received either preoperative or postoperative prophylactic x-ray therapy. These cases gave 48 or 38 per cent five-year cures. The 13 cases which did not have x-ray therapy yielded only four, or 31 per cent cures. The relatively small number of cases in the latter group makes this percentage difference of little or no significance.

Only 11 cases received preoperative x-ray therapy, with nine failures and two successes. Seven of these cases also received postoperative x-ray therapy.

Virtually all the x-ray cases were treated either by Dr G. W. Holmes at the Massachusetts General Hospital, or by Dr L. B. Morrison of Boston. During this period Dr Holmes was using a Waite and Bartlett machine 5 milliamperes, 16 inch distance, 3 mm aluminum filter, 80 K.V., later equipped with boosters to yield 200 K.V. Dr Morrison used an Acme machine, 140 K.V., 12 inch distance. For preoperative treatment 1 erythema dose was given. For postoperative treatment usually two erythema doses were given in one series of 12 to 14 weeks.

It is regrettable that opportunity for comparison of similar series with and without prophylactic radiation is not available at this time. With the data available, however, we are forced to admit that prophylactic x-ray treatment gave slightly better five year results in this series than in the previous series and that the improvement in the end-results of this series may well be due in part at least to the more general use of x-ray. It should be noted however, that in the 1918-1919-1920 series the I A cases (glands not involved) formed only 25 per cent of the whole series, while in the present group the percentage of I A cases has risen to 28. Final conclusions in regard to the value of prophylactic x-ray, therefore are scarcely justified from these statistics.

SUMMARY AND CONCLUSIONS

1 A consecutive series of cases of cancer of the breast entering the Massachusetts General Hospital in the years 1921-1922-1923 is reported with the five-year end-results

2 In comparison with previous series, the percentage of five-year cures has gradually increased since 1904. Greater care in estimation of the operability may be expected to increase the percentage of five-year cures.

3 Twenty-nine per cent of all cases entering the hospital are free from disease more than five years and 36 per cent of the cases of radical operation are free from disease more than five years.

4 The extent of the disease as determined by pathological examination of the tissues removed at operation is of the greatest importance in prognosis.

5 The preoperative duration of the tumor as recorded by the patient is of relatively little value in prognosis.

6 Cancer of the breast in young women is less curable than cancer in older women.

7 The histological grading of the degree of malignancy of the tumor is of great importance in prognosis, but it must be considered in connection with the extent of the disease and with other factors affecting the prognosis.

8 Tumors pathologically of high-grade malignancy metastasize early to the axillary lymph nodes and elsewhere.

9 Exploratory incision or excision of a breast tumor, properly performed, does not prejudice the chance of cure.

10 Prophylactic x-ray therapy was employed almost as a routine in this series and the improved results in the series may be in part due to this treatment.

11 Further reduction of the mortality from cancer of the breast depends today chiefly upon further education of the public and of the profession to regard seriously and to treat promptly and properly any abnormality of the breast.

NOTE. The writers acknowledge gratefully the assistance of Dr Charles E. Dumas of Boston in reviewing the radiation therapy given in these cases and of Dr Harry F. Hartwell in the study and grading of the pathological material.

REFERENCES

- 1 Greenough, R. B., Simmons, C. C. and Barney, J. D. The results of operations for cancer of the breast at the Massachusetts General Hospital from 1894 to 1904. *Surg. Gynec. & Obst.* 5: 29 (July) 1907.
- 2 Greenough, R. B., and Simmons, C. C. End results in cancer cases. Cancer of the breast. *Boston M. & S. J.* 155: 245 (Sept.), 1921.
- 3 Greenough, R. B. Carcinoma of the breast. Results of treatment 1918-1919-1920. *Am. J. Roentgenol.* 16: 439 (Nov.) 1926.
- 4 No. 2 age 65 Died strangulated hernia, 21 mos.
No. 31 age 76 Died heart disease (auto-sy), 55 mos.
No. 65 age 75 Died cerebral hemorrhage, 26 mos.
No. 115 age 74 Died myocarditis, 14 mos.
No. 172 age 67 Died cardiorenal, 44 mos.
No. 177 age 47 Died carcinoma stomach, 14 mos.
- 5 Greenough, R. B. Varying degrees of malignancy of cancer of the breast. *J. Cancer Research.* 9: 453 (Dec.) 1925.

cer as to the degree of malignancy as indicated by the cellular architecture and histology has been followed out in this series of cases. The criteria on which the grading was done have been described elsewhere.⁵ Since the original report we have been obliged to give consideration to an additional factor, "infiltration." This is a condition found occasionally even in cases of relatively pure adenocarcinoma or medullary growth, in which the tumor cells in one place or another have broken out from their elsewhere typical conformation and have infiltrated the fat and fibrous tissue in the neighborhood in columns of a more scirrhous type. This appearance we regard as a marked step in de-differentiation, and thus an indication of high malignancy. The present series yielded 122 cases of radical operations with known five-year results, of which the microscopic slides were obtainable for review. The examination of these slides was made by Dr H F Hartwell and Dr R B Greenough. The grading was done without knowledge of the end-results, and in only five cases were there serious differences of opinion between the two observers, and these were readily composed on further study and discussion.

The results are shown in table IV, which presents also the percentages of cures from the previous series for comparison.

TABLE IV

DEGREE OF MALIGNANCY IN RELATION TO CURES

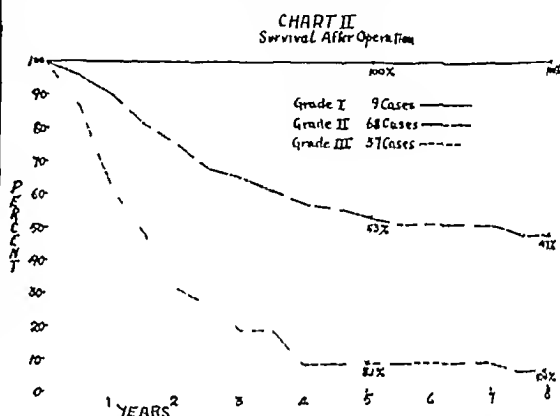
	Cases	Cures	Per Cent	'18, '19 '20 Series Per Cent
Axilla Not Involved				
Grade I	8	8	100	82
Grade II	29	17	59	43
Grade III	5	0	0	0
Axilla Involved				
Grade I	1	1	100	50
Grade II	42	13	31	31
Grade III	37	1	3	0

The grade of malignancy in relation to the duration of postoperative life is shown in chart II.

In this series the number of low-grade tumors is lower than in the previous series. The percentages, however, are not materially different. One notable exception exists to the general rule, namely, the single case in the Grade III, I C group which is alive and well, now nine years after operation. This case has been reviewed and discussed, but shows so great a degree of pleomorphism and so complete a degree of de-differentiation that it is impossible to grade it other than as a highly malignant tumor.

The application of this classification of the degree of malignancy of a breast cancer to the prognosis of the individual case must be made

with considerable reservation. We must recognize that every case of breast cancer is capable of causing the death of the patient. Again the extent of the disease is of the greatest significance. Other things being equal, however, we may say that a tumor of low grade malignancy does not extend so widely nor so promptly from the point of origin, and thus the opportunity for successful removal is greater than in the middle group, and far, far greater than in tumors of high malignancy. That 42 out of 122, or 34 per cent of this series fell in the high-grade group indicates that a very considerable number of cases of cancer of the breast are still beyond the hope of surgical relief. However, unless our present idea of the origin of cancer as a local process is incorrect, there



is no reason why earlier and earlier recognition of the disease should not give us more and more cures even in the cases of high grade malignancy.

The significance of the grading for prognosis may be considered also from the viewpoint of preoperative duration of the disease. It will be noted that all the Grade I cases were cured and that with one exception all the Grade III cases were failures. The average preoperative duration for both groups was the same, namely eight months. The Grade II cases without axillary involvement presented an average duration of 5.3 months in the cured cases, and of eight months in the failures. The Grade II cases with axillary involvement averaged 4.6 months in the cured cases and 10.3 months in the failures.

Axillary metastases were present at the time of operation in 11 per cent of Grade I cases, 70 per cent of Grade II cases, and 90 per cent of Grade III cases.

An attempt was made to determine the possible danger of exploratory incision in cases of doubtful diagnosis. Definite exploration of the tumor was made in 27 cases, including a few in which several days elapsed between simple mastectomy and radical operation. This group presented 15 cures (55.5%). It should be realized that cases in which exploration is indicated are

There were 179 operations performed by 22 surgeons, 90 were performed by two men. Only two other surgeons performed more than eight operations during the three years.

RADICAL OPERATION—By radical operation is meant the removal of the breast with all the overlying skin, the deep fascia, the contents of the axilla and both pectoral muscles. A modified transverse axillary incision was usually employed and the longitudinal incision carried well down toward the umbilicus in order to remove the lymphatics from this region. A portion of the anterior sheath of the rectus muscle was usually removed. The skin incision was beveled to remove a large amount of subcutaneous tis-

TABLE 2
CASES AVAILABLE FOR STUDY

1 Primary Cases	208
(A) Disease limited to breast	76
(C) Disease limited to breast and axilla	114
(D-E-F) Advanced—Incurable by surgery	18
2 Recurrence after radical operation	14
Local and axilla	3
Remote	11
3 Recurrence after incomplete operation	11
Local and axilla	8
Remote	3
4 Admitted for prophylactic x-ray—operation elsewhere	5
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INCOMPLETE OPERATION—This term has been employed to cover any operative procedure short of the radical operation. We consider it justifiable in certain elderly people in poor physical condition, or as a palliative procedure to remove a sloughing tumor if the local growth cannot be controlled by radiation.

The 190 primary cases in which the disease was limited to the breast or breast and axilla may be subdivided as follows (table 3).

It will be noted that of the 179 cases operated upon the end-result is known in 176. Excluding the case in which no pathological examination of the specimen was made, the cases that died of other causes within five years, without recurrence

of disease and the patients that refused operation there remain 167 cases suitable for study. The cases dying of intercurrent disease less than five years after operation have been carefully reviewed and it is improbable that death was caused by a remote metastases. In 66 or 40 per

TABLE 3
PRIMARY OPERABLE CASES

1—A Disease limited to the breast	
Suitable for study	64
Refused operation	5
Died without recurrence less than 5 years	6
No pathological report	1
Postoperative death (considered as failure)	1
No follow up (considered dead of disease)	1
	76
1—C Disease limited to breast and axilla	
Suitable for study	99
Refused operation	8
Died without recurrence less than 5 years	5
No follow up (considered dead of disease)	2
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cent the axillary glands were not involved microscopically while in 101 the disease had extended into the axilla.

RESULTS—Of the total of 167 primary cases in which the disease was confined to the breast and axilla, 69 are known to be living and free from disease five or more years after operation (40.9%). This is to be compared with the figures in previous reports (Table 4).

TABLE 4
COMPARISON OF RESULTS OF TREATMENT

Period	Per Cent Cures
1894-1904 (3 years)	19%
1911-1914 (5)	27
1918-1920 (5)	30
1921-1923 (5)	35
1924-1926 (5)	41

There was one postoperative death of pulmonary embolism on the 18th day.

Of the 167 cases a radical operation was performed on 158 and an incomplete operation on nine. Of the nine patients in whom an incomplete operation was performed five are living without disease, two of these were 75 years of age, and in two a small area of carcinoma was found microscopically after a simple amputation for what was believed to be cystic disease. The fifth case was one of medium malignancy in which cancer was found in the glands removed from the lower portion of the axilla. Three of

CANCER OF THE BREAST END-RESULTS*

Massachusetts General Hospital 1924, 1925, and 1926

BY CHANNING C. SIMMONS, M.D.,† GRANTLEY W. TAYLOR, M.D.,† AND RICHARD H. WALLACE, M.D.†

THE following report is based on the cases of carcinoma of the breast admitted to the Massachusetts General Hospital in both the private pavilion and the general wards for the three-year period, 1924-1925-1926. It is made for comparison with similar reports prepared by Dr. Simmons and Dr. Greenough.

In 1907, the cases of cancer of the breast admitted to the hospital from 1894 to 1904, 613 in number, were collected and the results of treatment studied on a three-year basis¹.

In 1921, the results of treatment of 115 cases observed in the three-year period 1911 to 1914 were reported on a five-year basis².

In 1926, the results of treatment of the cases seen in the hospital in the three-year period 1918-1920 were studied. In this series the cases treated in the private pavilion were included³.

The results of treatment of the cases seen in

Taken as a whole the figures show some improvement and suggest that patients are seeking advice for a tumor of the breast at an earlier date.

Many statistical papers on the etiology of the disease have been published and in the following only those factors which have a direct bearing on the choice of treatment and prognosis will be considered. In studying the cases the histories were posted on the abstract record sheets prepared by the American College of Surgeons and the classification adopted by the College was employed.

The term "cure" is applied to cases living without evidence of disease five or more years after operation. No case is considered as a cure unless the diagnosis was confirmed microscopically. A minimum of five years from the time of operation has elapsed in all cases. The average time after operation was seven years while many cases have been followed for nine years. Eight cases (10.5%) living at the end of five years are known to have died later of metastases and are considered as failures. It is probable that a few others now living will also die of this disease. The greater number of the living cases were examined personally by some member of the hospital staff or their local physician, although in a few instances it was necessary to rely on a letter from the patient.

Untraced cases are considered as having died of cancer. This may not seem quite fair for it has been found that, in this community at least, any case which cannot be traced is usually living. We believe, however, that if the cases are treated in this manner the figures are less open to criticism.

OPERABILITY—It is impossible to determine with any degree of accuracy the percentage of operability. The cases operated upon in the private ward were, obviously, not referred to the hospital unless operable. On the other hand, many incurable patients were hospitalized in order that they might receive high voltage x-ray treatment.

Apparent arithmetical errors may be noted in certain of the tables. We believe these have all been satisfactorily accounted for but to avoid confusion the reasons have not been given in the individual table.

During the three-year period 238 cases were admitted to the hospital. These cases may be divided as follows (table 2).

This discussion will be confined to the primary operable cases, i.e., the 1-A and 1-C groups of the classification of the American College of Surgeons.

TABLE 1

EXTENT OF DISEASE—OPERABLE CASES

	No of Cases	Axillary Glands Not Involved
1894-1904	353	33%
1911-1913	62	31
1918-1920	99	30
1921-1923	148	28
1924-1926	168	41

the three-year period 1921-1923 have been collected by Dr. Greenough⁴.

This series has been studied to determine if there has been any improvement in the results of treatment. During the period 1910 to 1920 the radical operation was more generally performed, and in this series the patient had the advantage of x-ray treatment combined with surgery, although radiation treatment at this time was admittedly much inferior to that given at the present day. An active campaign of public education was also instituted by the American Society for the Control of Cancer and the Massachusetts Department of Public Health in 1924.

In all of the earlier series the ratio of cases without involvement of the axillary glands to those in which the lymph nodes were diseased remained about the same. This series shows a slightly larger proportion of early cases (Table 1).

*Read before the New England Surgical Society, September 29, 1933, at Boston.

†Simmons, Channing C.—Visiting Surgeon, Massachusetts General Hospital. Taylor, Grantley W.—Assistant Surgeon to Out Patients, Massachusetts General Hospital. Wallace, Richard H.—Assistant in Surgery, Massachusetts General Hospital. For records and addresses of authors see *This Week's Issue*, page 871.

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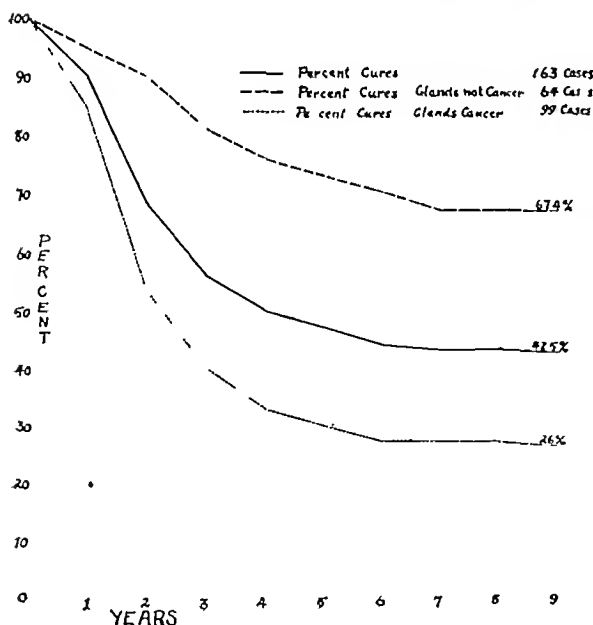
EXTENT OF DISEASE AND RESULTS—The operable primary cases in which an attempt to cure by surgery was made may be divided into those with and those without involvement of the axillary glands. There were 66 cases in which the disease was confined to the breast with 43 cures or 64 per cent, and 101 cases in which the axilla was involved with 26 cures or 26 per cent (Table 5)

TABLE 5
CURES AND EXTENT OF DISEASE

	Cases	Cures	Per Cent Cures
Axillary glands not malignant	66	43	64%
Axillary glands cancerous	101	26	26

The results are shown in graphic form in table 6 which gives the percentage of cases living at yearly intervals. In making these graphs the three cases in which the result is not known are omitted

TABLE 6
PERCENTAGE OF CURES AT YEARLY INTERVALS



PATHOLOGY AND RESULTS—In most cases the specimens were available for review and examined by Dr. H. F. Hartwell, surgical pathologist at the Massachusetts General Hospital, Dr. Greenough or Dr. Simmons.

The cases were divided into three degrees of malignancy: low, medium and high, and the results of treatment of these three groups com-

pared. The following points were considered in determining the degree of malignancy:

- (1) The degree of differentiation of the cells, that is the tendency of the tumor cells to form glands and the evidence of secretory activity, as shown by the presence of vacuoles in the protoplasm.
- (2) The uniformity in size and general appearance of the cells and nucleus, and the number of mitotic figures.
- (3) The tendency of the tumor to infiltrate.

A tumor composed of cells of uniform size and shape, containing vacuoles and having a marked adenomatous arrangement was considered as being of low malignancy. One in which there was little or no tendency to glandular formation and in which the cells infiltrated the surrounding tissues, varied in size, and presented pleomorphic nuclei with many mitotic figures was considered as being of high malignancy. Comparing the pathological index of malignancy as determined in this manner with the results, it was found that there was a very distinct relation between the two (Table 7).

TABLE 7
PATHOLOGICAL INDEX OF MALIGNANCY AND CURES

	Cases	Cures	Per Cent Cures
Grade 1	27	22	80%
2	89	34	39
3	47	13	27.7

Taking into consideration both the pathological index of malignancy and the extent of the disease the results were as follows (tables 8 and 9).

TABLE 8
PATHOLOGICAL INDEX OF MALIGNANCY AND CURES

Axilla Not Involved			
	Cases	Cures	Per Cent Cures
Grade 1	20	18	90%
2	26	19	58
3	8	4	50

TABLE 9
PATHOLOGICAL INDEX OF MALIGNANCY AND CURES

Axillary Involvement			
	Cases	Cures	Per Cent Cures
Grade 1	7	4	57%
2	53	13	24
3	39	9	23

This is shown in graphic form in tables 10-11-12, in which the percentage of patients living at yearly intervals is given for the different grades. In tables 11 and 12 the results are given for the

groups with and without axillary involvement separately

In cancer of low malignancy the axillary

TABLE 10

PATHOLOGICAL INDEX OF MALIGNANCY AND PERCENTAGE OF CURES AT YEARLY INTERVALS

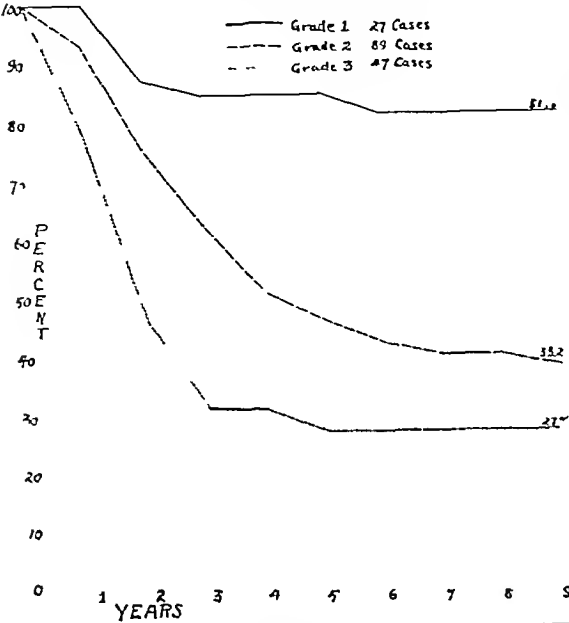
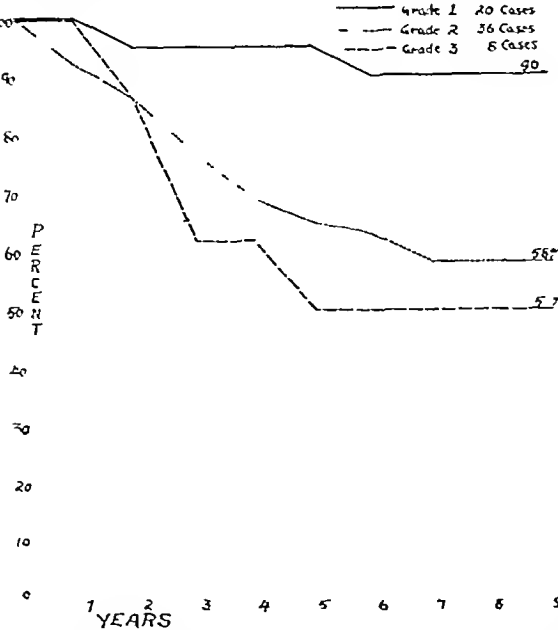


TABLE 11

PATHOLOGICAL INDEX OF MALIGNANCY AND PERCENTAGE OF CURES AT YEARLY INTERVALS—DISEASE LIMITED TO THE BREAST



glands were involved in about one-third of the cases, in cancer of medium malignancy one-half

and if the tumor was of high malignancy two-thirds

TABLE 12

PATHOLOGICAL INDEX OF MALIGNANCY AND PERCENTAGE OF CURES AT YEARLY INTERVALS—AXILLA INVOLVED

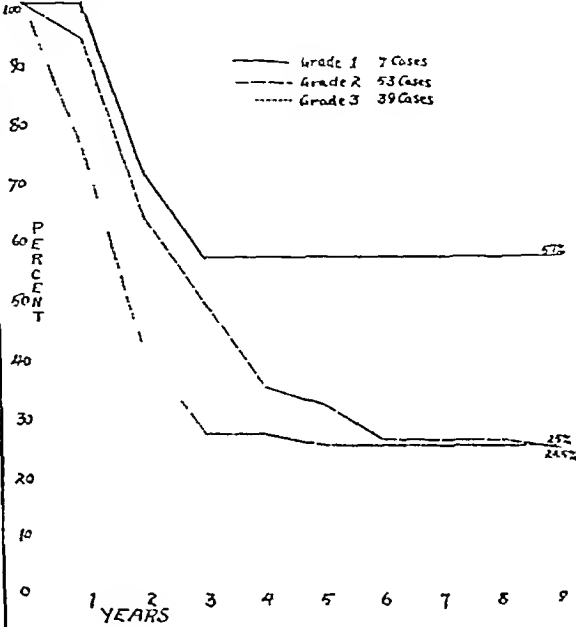


TABLE 13

PATHOLOGICAL INDEX OF MALIGNANCY AND AXILLARY INVOLVEMENT

	Axillary Glands Not Cancerous	Axillary Glands Cancerous
Grade 1	65%	35%
2	45%	55%
3	30%	70%

It will be noted that the results of operation for cancer of low malignancy with diseased axillary glands were better than those of cancer of medium malignancy in which the disease was confined to the breast

From a study of the results of this group of cases we believe that the pathological index of malignancy is of definite aid in determining the prognosis in the individual case, although several other factors must also be taken into consideration. Certain striking exceptions that cannot yet be explained occur, and the personal equation of the pathologist also enters into the grading of any group of cases

AGE AND RESULTS OF TREATMENT (Data on 155 cases)—The ages of the patients varied between 32 and 81, and contrary to the statement often made there were an appreciable number of cures in patients under 40 years of age. Of the 17 cases between the ages of 30 and 40, six were living without disease five or more years after oper-

ation In all of these cases the disease was limited to the breast, however (Table 14.)

TABLE 14
AGES AND RESULTS

Age	Cases	Cures	Per Cent Cures
31-40	17	6	34
41-50	53	21	40
51-60	50	22	44
61-70	26	11	40
71-80	9	3	33
Totals	155	63	

The cases were then divided into two groups Of 70 cases less than 50 years of age 27 or 39 per cent were cured, while of 85 patients over 50 years of age 35 were cured or 40 per cent These figures suggest that although the diffuse cancer seen in lactating breasts in younger women is usually incurable by surgery, other forms do occur which are not so highly malignant These two types can often be recognized clinically Of the six cases under 40 years of age cured, two were pathologically of low malignancy, one of medium and three of high malignancy It will be noted in the table that the percentage of cures varied relatively little in the different decades when the small number of cases in any one bracket is considered

Taking into consideration the pathological index of malignancy and the age of the patients operated upon, it was found that there was a slightly larger number of cases of the more malignant forms in patients between the ages of 30 and 40, but the figures were not striking The actual percentage of cases of high malignancy occurring in this decade may be somewhat larger than is indicated by the figures, as the inoperable cases were, obviously, not referred to the private ward for operation, and if seen as out-patients in the general hospital were referred directly to the x-ray department for treatment (Table 15)

TABLE 15

PATHOLOGICAL INDEX OF MALIGNANCY AND AGE

Ages	No of Cases	Grade 1	Grade 2	Grade 3
31-40	17	12%	52%	35%
41-50	53	19%	54%	26%
51-60	50	16%	48%	36%
61-70	26	19%	66%	15%
71-80	9	11%	55%	33%
Totals	155	16.8%	54.2%	29%

OPERATION AND RADIATION—RESULTS (Data on 164 Cases) — Prophylactic radiation treatment as given in the years 1924-1925-1926 would be considered inadequate when judged by present-

day standards Eight hundred r were given in 3 doses with the high voltage machine, that is 200 kv The exposures were made at 50 cm distance and filtered by $\frac{1}{2}$ mm of copper and 4 mm aluminum Three portals were used as follows one 20 x 20 cm over the chest anterior, one 15 x 15 cm in the axilla and one 15 x 15 cm to the back to include the supraclavicular space

In studying the cases, those that did not report regularly are excluded Ninety patients received what at that time was considered sufficient prophylactic x-ray treatment This was given before operation in 12 instances, and in 78 after operation Of the 90 cases, 31 are living, 34 per cent, while of the 74 patients who received no prophylactic x-ray treatment 41 are living, or 54 per cent To exclude the error which might be due to the possibility that only the more advanced cases received prophylactic treatment, the cases in which the axillary glands showed no disease were considered separately Of 18 cases without axillary disease that received radiation treatment 11 were cured, 61 per cent, while of 44 cases in the same group who did not receive treatment 30 were cured or 68 per cent In the patients in whom the glands were diseased, 70 received radiation treatment of which 18 were cured or 26 per cent, and, of the 28 cases that did not receive treatment in this group, seven were cured or 25 per cent The results are shown in table 16 It will be noted that the figures in both of these groups are practically the same It must, therefore, be concluded that prophylactic radiation treatment as given in the years 1924-1925-1926 to this group of cases did not influence the results of operation

TABLE 16

SURGICAL CURES AND PROPHYLACTIC RADIATION

	A Ray Given			No X Ray		
	Cases	Cures	Per Cent	Cases	Cures	Per Cent
Axilla not involved	18	11	61%	44	30	68%
Axilla diseased	70	18	26%	28	7	25%

The duration of life after operation in these two groups of cases is shown graphically in tables 17 and 18

Accurate data in regard to the effect of x-ray in preventing local recurrences and to the prolongation of life and relief of symptoms in recurrent cases are unsatisfactory, for if all the factors that govern the prognosis are taken into consideration there remain such a small number of cases in each group that it is unfair to draw conclusions The general impression obtained, however, was that prophylactic radiation did not prevent local recurrence In cases of recurrent cancer, radiation treatment made the patient more comfortable and prolonged life

EXPLORATORY INCISION—In many cases the tumors were seen at an early stage of the disease

TABLE 17

DURATION OF LIFE WITH AND WITHOUT PROPHYLACTIC RADIATION—DISEASE LIMITED TO THE BREAST

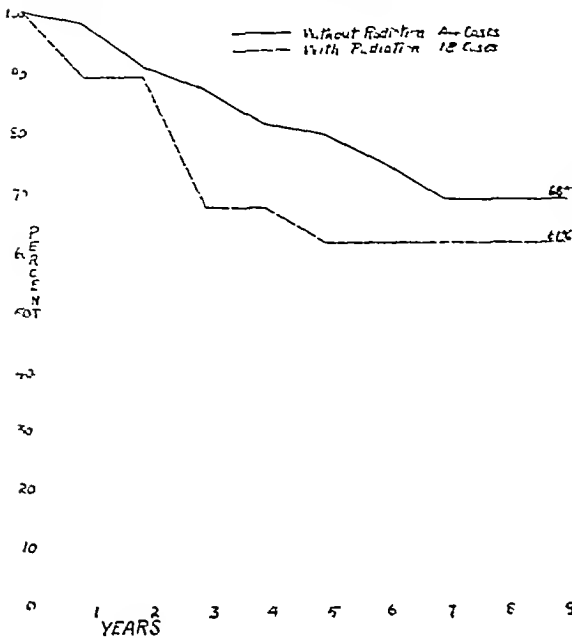
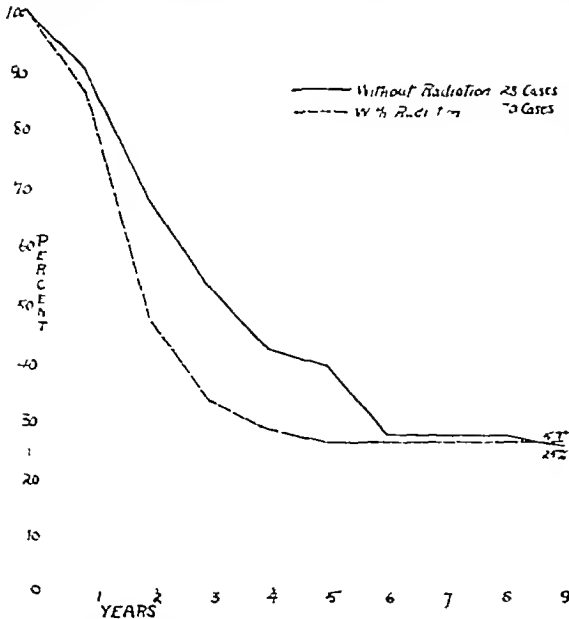


TABLE 18

DURATION OF LIFE WITH AND WITHOUT PROPHYLACTIC RADIATION—DISEASE LIMITED TO BREAST AND AXILLA



and an exploratory incision was made into the growth to verify the diagnosis, before performing the radical operation. In most instances,

an incision was made directly into the tumor a specimen removed for examination and the wound packed with a sponge wet in alcohol or formalin. The radical operation was then performed immediately. Thirty-three cases were explored before operation in this manner of which 21 were cured or 65 per cent. In 127 instances the tumor was not explored, and of these cases 45 or 35.4 per cent were cured.

It is obvious that the early cases favorable for surgical cure and in which the diagnosis was in doubt were explored, while in the more advanced cases a radical operation was performed without investigation of the primary tumor. It seems fair to assume, however, from these figures that a carefully performed biopsy followed by immediate radical operation does not tend to disseminate the disease.

In two instances the tumor of the breast was excised at another institution, found to be cancer and the patient referred to the Massachusetts General Hospital where a radical operation was performed five and fourteen days later. One of these was a case of low malignancy in which the disease was confined to the breast and the operation resulted in a cure. The other was a case of high malignancy with axillary involvement and the patient died of recurrence. We have felt that a biopsy performed in this manner was a dangerous procedure as it disseminated the disease and that the radical operation performed later rarely resulted in a cure.

DURATION OF DISEASE—GRADE OF MALIGNANCY AND RESULTS (Data on 139 Cases)—As in previous series of cases it was found that the duration of the tumor before operation had little relation to the percentage of cures. This is interpreted to mean that the cures were obtained in the slowly growing forms of the disease. Of 94 cases of less than six months' duration, 41 or 43.5 per cent were cured while in 49 cases of over six months' duration 21 or 43 per cent were cured. If the pathological index of malignancy was considered as well the figures are far from conclusive but suggest that a larger proportion of the cases of high malignancy considered suitable for operation were seen within six months of the onset of the disease. It is to be inferred that the average case of high malignancy of over six months' duration was considered inoperable (Table 19).

TABLE 19

DURATION OF TUMOR AND PATHOLOGY			
Grade		Less Than 6 Months	Over 6 Months
1	60%	40%	
2	65	35	
3	70	30	

SUMMARY

- (1) The five-year end-results of the cases of carcinoma of the breast operated upon

at the Massachusetts General Hospital in both the private pavilion and the general wards are given

- (2) There were 167 cases in which an attempt at surgical cure was made, and the result is known in 164 instances. Where the result is not known the case is presumed to have died of cancer.
- (3) Sixty-nine cases or 40.9 per cent are living without evidence of disease from five to nine years after operation.
- (4) In the 66 cases in which the disease was confined to the breast 43 or 64 per cent are living.
- (5) Of the 101 cases in which the disease extended to the axillary glands 26 or 26 per cent are living.
- (6) The pathological index of malignancy as determined by the amount of differentiation of the cells in the microscopic specimen was found to be one of the important factors governing the prognosis.
- (7) Cancer of low malignancy curable by surgery occurs frequently in women under 40 years of age.
- (8) Prophylactic x-ray treatment as given in 1924-1925-1926 to this group of cases apparently had no effect in preventing recurrence.
- (9) The impression obtained from the study of recurrent cases, however, was that radiation treatment made this group of patients more comfortable and prolonged life.
- (10) Exploratory incision if carefully performed does not disseminate the disease.
- (11) Something over 11 per cent of the cases living without evidence of disease 5 years after operation will subsequently die of recurrence.

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DISCUSSION

DR. CARL MERRILL ROBINSON, Portland, Maine*
Mr. President and Members of the Society—Just 48 hours before I left for Boston, I noticed by the program that I am expected to discuss the statistical papers of Dr. Greenough and Dr. Simmons. You have my apology for my inadequate and almost ex tempore discussion.

*Read by Dr. William H. Bradford.

At the Maine General Hospital during the five years previous to last June, there were 203 breast cases admitted. A much simplified classification of them is as follows:

Abscess	12
Adenomatous growths all types	26
Mastitis and cystic disease	58
Fibroma	2
Lipoma	2
Dermoid cyst	1
Simple hypertrophy	3
Sarcoma	2
Paget's disease	1
Duct cancer	3
Metastatic cancer	3
Primary cancer	90

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Approximately 50 per cent of all breast cases admitted were malignant. End results are not available as our tumor and follow-up clinics are just getting under way.

My personal records, 1926-1932, show 45 cases of cancer of the breast operated upon and a considerable number of others referred for radiation. In January of this year, I had reports from 36 of these. Twenty-three were living and symptom free, six over five years, five over four years, and ten over two years. Three died of other causes, ten died presumably of cancer. There were six deaths within two years of operation from cancer of liver, bone metastasis or general carcinomatosis but I did not find any record of local recurrence in these cases. These few cases show very definitely the distinction between operability and curability by operation. They show our helplessness in detecting early metastasis either by x-ray or physical examination. I am assuming that metastasis had taken place before operation as I have no evidence of local recurrence as the source of general dissemination.

In going over the records of the x-ray therapy department with Dr. Thaxter, I find a distressingly large number of cases sent in for postoperative radiation with bone and lung metastases, so obvious, that they should have been easily detected by x-ray before operation. Operation on this type of case, other than as a palliative procedure, brings disrepute to surgery and helps to send curable patients to the various cults and types of quackery.

We are very sure that our end results at the Maine General are definitely improving since we have insisted on careful x-ray study before the decision on operability is made.

I must report one tragic case in which we tried so hard to do the right thing. A life-long friend of mine and the wife of a doctor consulted me about five years ago at the age of 47 for a small nodule in the upper outer quadrant of the left breast. Her husband had known of it for two years but considered it of no importance. Both breasts were large and heavy and had always produced an overabundance of milk during her four periods of lactation. The general impression was bilateral cystic disease. No other distinct nodules were felt and no glands palpable. Removal of the growth showed it to be encapsulated and grossly benign. Frozen section report was adenoma but because of the presence of cystic disease about the tumor, pathologists advised simple mastectomy which was done. Study of the breast tissue removed showed adenocarcinoma. We had obviously done inadequate surgery for cancer of the breast.

The slides were seen by Dr. Greenough and Dr. Hartwell. We were advised to subject the patient to immediate x-ray treatment and to do a radical operation after several months. The dissection of

the axilla was done about three months after the original mastectomy and showed a single gland with evidence of invasion. The functional result was excellent. The patient resumed all her activities and gained weight.

Shortly after her first radiation, the remaining breast showed some diminution in size and the gland tissue seemed peculiarly close to the skin. The breast, which had been removed, showed cystic disease and we assumed that a similar process was present in the remaining breast, with involution hastened possibly by radiation. However, we sent her to Dr Greenough for consultation. Should a simple mastectomy be done? Dr Greenough felt that it was unnecessary. Repeated examinations physical and x-ray, showed no change in her condition.

A few months ago she presented herself to me in the best of health but somewhat concerned because a friend of hers had told her that fixation of the skin over the breast meant cancer. The process was distinctly more definite than on previous examination and the whole breast felt firmer but no definite tumor could be felt. Again we called for help and Dr Greenough advised surgery. Radical operation of the breast was done and a small hard cancer was found with much fibrosis of the whole breast. Pathological examination showed carcinoma of the duct type with a single gland in the axilla showing invasion. Again she had x-ray and to date is doing well. Here we have two distinct types of cancer in opposite breasts both, of which showed cystic disease. Were both of these tumors primary?

I have enjoyed very much the papers by Dr Greenough and Dr Simmons. They bring to mind more clearly than ever how difficult it is to keep a proper perspective on a problem like cancer in a small hospital with relatively few cases in any one series.

DR. LUCIUS C. KINGMAN, Providence, R. I. These breast tumors are clinically queer. There was a patient in the office yesterday for a routine examination on whom I did a radical breast operation seventeen years ago and from whom I removed a skin nodule about three inches from the original scar one year ago. That nodule was adenocarcinoma. Where had the cells been in the meantime? Where have the cells been all the time that show up in the spine nine years after a radical operation?

As we see the cases clinically about all we can do is to determine whether in that individual case we can get away with an operation. We see a case and we fear to operate on it and we think "What's the use? She will be dead in three months" and she dies of pneumonia nine years later. Another case on which we think we have done a beautiful job, dies of lung metastasis in three months. Until we know the underlying factors of cancer we can't do much more than that.

In regard to radiation I think most of us feel we have to hit the carcinoma with everything we have that may be of benefit. We unfortunately at home in a tumor clinic see a great many cases that are inoperable. These we subject to radiation and we get an occasional case in which, following radiation we can do a palliative operation at least. Under our eyes cancer tissue is affected by radiation. If so before operation it seems reasonable that there must be some effect in some cases following operation.

I am quite in agreement with the first speaker who mentioned axillary involvement probably being a measure of the spread of the disease, not of the age of the disease that it may represent the more active type of carcinoma, not because the patient has neglected it.

I am in even a worse position than Dr Robinson because I didn't have forty-eight hours notice. I knew nothing about the discussion until I arrived here, so I can't inflict you with more figures.

DR. HORACE K. SOWLES, Boston, Mass. I should like to ask Dr Taylor one question in regard to his age group prognosis with apologies to Dr Simmons because I think his tables partially answer the question. It seems to me that given a carcinoma of the breast in a young person the prognosis is not bad merely because that person is young because in the young person the resistance is probably better and if a young person developed the disease it is probably a higher grade malignancy.

It seems to me that, given a hypothetical carcinoma of the breast the prognosis for that individual carcinoma of the breast is just the same whether the patient is twenty-five or seventy-five years of age.

DR. STEPHEN A. MAHONEY, Hallowell, Mass. I see that the title of the paper is "Cancer of the Breast—End Results." Now the question in my mind is when are the end results? Can you simply state when is the end of cancer, in a person who has cancer of the breast?

During the reading of the paper, two cases in my practice came to my mind. Sixteen years ago I operated on a case of cancer of the breast, doing the ordinary radical operation, followed it along for about two years and then the case disappeared. Thirteen years after the operation the patient appeared again in my office with a recurrence at the upper part of the sternum evidently due to a metastasis in the anterior mediastinum. We gave a fatal prognosis. We had come into the possession of some radium at that time and inserted 50 milligrams of radium into the sternum going through it, evidently into the anterior mediastinum. That resulted in an ugly slough at the upper part of the sternum. After two or three months that finally healed.

That was three years ago. That patient we saw last week and we would say that she was cured but the question in our mind is: Is she cured? Are there still cancer cells in that patient that will reappear? So, are there such things as end results in cancer?

In another case that is now under active treatment we operated seven years ago, gave the ordinary after-care following along for about two years and then discharged her as cured. Five years later she reappeared in the office with her side entirely studded with skin cancer, en cuirasse type of recurrence. Under x-ray that has been held in abeyance for the past two years.

Three weeks ago she appeared again in the office with a definite cancer of the opposite breast and we operated on that breast by simple mastectomy but going up into the axilla. She made a good recovery. Is it an end result, after seven years?

The question is when shall we report end results in cancer?

DR. GRANTLEY W. TAYLOR. Dr Robinson and Dr Kingman both emphasized the desirability of very careful pre-operative studies in cases of carcinoma of the breast, in the matter of determination of operability.

Dr Richard Dresser has recently made a study of cases of carcinoma of the breast at the Pondville Hospital with complete skeletal x-rays, with very interesting findings. That study is in process of publication if it has not already been published. The significant finding he brings out, I think, is that ordinarily three x-ray treatments are adequate for determination of the presence of remote metastasis. He has a plate involving the chest, including the

shoulders, and the dorsal spine, and another of the pelvis and he believes we should have the skull plate, on the ground that the skull frequently was the only place showing the osteometastasis. Seven teen per cent of the breast cases showed osteometas tasis with no other evidence of metastasis elsewhere, as contrasted with 14 per cent showing pulmonary metastasis with no metastasis elsewhere.

By taking those three plates, it seems you do all you can to rule out remote disease, always bearing in mind that frequently the patients may have symp toms referable to bone metastasis, especially in the spine, considerably before they will show up by x ray examination.

Dr Sowles raised the question of whether the youth of the patient per se has anything to do with the prognosis. I am sorry if my findings gave that impression. I said cancer in young people ap parently has a poorer prognosis than cancer in older people, I think, and I agree with Dr Simmons in thinking that that is because the more malignant types of growth tend to occur more commonly in younger people and the more benign types in older people. If you could get two equally comparable types as regards their degree of malignancy, one in a young person and one in an old person, the prog nosis in regard to cure would not differ appreciably in those two.

Dr Mahoney perhaps would point out that the young person's prognosis was poorer as she was going to live longer and so would be more likely to develop late recurrence. Specifically in regard to Dr Mahoney's point, I think a real mathematician perhaps could take the chartings which Dr Simmons and I both showed of the survival at intervals after operation in the various groups of cases and plot a curve by which he could tell you what the annual decrement would be after a certain period of time on the basis of a mathematical formula. It would show as Dr Simmons pointed out, that about 11 per cent more cases will die of late disease than have already shown evidence of recurrence at the end of five years. That becomes increasingly a smaller percentage as time goes on.

Of course you can't tell which one of a group of cases will be the one which will carry the residual minute percentage of recurrent disease after the follow up period.

These two extensive studies, although ostensibly five-year studies, Dr Simmons has followed for nine years in many cases, and my chart showed an eight-year determination.

DR. CHANNINO C. SIMMONS. There are certain other points brought out in the study of these cases. It has been impossible to determine the operability as in the general hospital the inoperable cases are weeded out in the Out Patient Department and Tu mor Clinic and are not admitted to the wards. In the private pavilion no case is referred for surgical treatment unless it is operable.

All cases have a radiographic examination made of the chest and bones before operation to rule out the possibility of remote metastases.

Cases in which the diagnosis can only be definite ly established by an exploratory incision are referred to the hospital and I find that my clinical diagnosis is more often incorrect than was formerly the case.

There is an operative mortality of from 1 to 4 per cent. In the series reported there was one death from pulmonary embolus, an operative mor tality of 6 per cent.

Late recurrence, that is recurrence five or more years after operation is relatively common in can cer of the breast. This is not true in cancer of cer tain other organs as, for example, the tongue in which recurrent disease after three years is rare, although a second cancer may develop at some point on the buccal mucosa. It is necessary, how ever to place some time unit and five years has been generally adopted, with the understanding that approximately 15 per cent of the patients living at the expiration of that time will probably develop late recurrences.

Patients with cancer of the breast have been known to live from 15 to 20 years without treat ment after the diagnosis was established. One of the most illuminating papers on this subject was published by Dr E. M. Daland. He followed 100 consecutive cases of cancer of the breast which re ceived no treatment and found 26 per cent living five years from the onset of the disease. It must be understood, however that these patients were liv ing with disease and all died within ten years, while of the cases operated upon, living five years, the greater number are living without disease.

DAIRY SCIENTISTS PERFECT METHOD FOR RECOVERING MILK ALBUMIN FOR BABY FOOD

Scientists of the Federal Bureau of Dairy Indus try have devised a method and a factory scale ap paratus for recovering milk albumin from sweet whey, with the natural properties of the albumin unimpaired. The Bureau estimates that the pow dered albumin can be produced for somewhat less than 50 cents a pound and that its chief value would be as an ingredient of modified infant foods, which commonly retail for about a dollar a pound or for adding to cows milk to make it more suitable for infant feeding.

The albumin of milk resembles somewhat the al bumin of egg and has high nutritive value. Cows milk, which contains less than half as much albumin as human milk, has a tendency to coagulate in large masses which digest slowly in the infant stomach whereas human milk coagulates in the stomach in fine flocks and is easily digested. The addition of the powdered albumin to cow's milk serves not only

to raise the albumin content but to change the phys ical properties of the milk so that when it is acted on by the acids of the infant stomach it is coagu lated into a finely divided curd much like that of human milk.

At present albumin is produced in connection with the manufacture of commercial milk sugar from whey but the albumin has little value because its solubility is destroyed in the separation process. By the new method developed by the Bureau the sugar may be crystallized from concentrated sweet whey, leaving a mother liquor that contains some of the sugar most of the minerals, and all the albumin. This liquor may be dried without affecting the solu bility of the albumin but the salt content of the re sultant powder is so high that it is not suitable for modifying cows milk. The scientists found, how ever, that the greater part of these salts can be re moved without affecting the other constituents by subjecting the mother liquor to electric dialysis be fore drying it and they have devised an apparatus in which this can be done on a factory scale—
Bulletin U. S. Department of Agriculture

OBSERVATIONS ON THE PROBLEM OF
MATERNAL MORTALITY*

BY EDWARD S. BRACKETT, M.D.†

THERE is a rapidly growing literature, both lay and professional, on the subject of Maternal Mortality. The former, while well-intentioned, is usually ill-informed. It lays unwarranted emphasis on comparisons between the published maternal mortality rates of this and foreign countries based on governmental registration of births and deaths. The statement has been made and widely quoted that the United States stands almost if not quite at the bottom of the list of civilized countries in its maternal mortality record and the inference is drawn that the American physician as an obstetrician is about the worst in the world. Writers of professional articles on the subject who should know better also fall into the same error. Euthusiasmatic propagandists for the reduction of maternal mortality to stress a point, quote statistics without careful analysis or intelligent interpretation and thereby defeat their own purpose. The natural reaction of the profession is too often one of defense rather than a determination to find out and remove the causes of maternal mortality which every unprejudiced investigator must admit is unnecessarily high the world over. Kerr¹ states "puerperal mortality and morbidity in this country (England) can be reduced by not less than 40%." The available evidence would indicate that the same is true of maternal mortality in this country. We should, therefore, ignoring invidious and unfair comparisons with the published mortality rates of other countries assiduously apply ourselves to the task of discovering the ultimate causes of puerperal deaths and endeavor to remove the causes found to be preventable. This will be a tedious and humdrum task. No speedy or spectacular results can be anticipated. It means first the careful investigation of individual deaths their intelligent classification and analysis and secondly, a courageous effort to learn the lessons that the facts teach us, put them into practice and by a well-planned campaign of education, lay them before the profession.

A campaign for the reduction of maternal mortality would seem to demand a definition of what constitutes a puerperal death. There is no agreement at the present time even on that point. The Division of Vital Statistics Bureau of the Census Washington² sent 1073 identical copies of selected death certificates to twenty-

four foreign countries for assignment of the causes of death. Replies were received from sixteen countries. Of the 1073 deaths certified only 431 were attributed by all the countries to a puerperal classification without a contributing cause. Of the 642 remaining certificates, the cause of death was assigned to a non-puerperal condition in percentages ranging from 28 to 36.6. Only one country Denmark (28%), assigned fewer deaths to non-puerperal causes than did the United States (11.8%). The interesting fact that Norway (36.6%) and Sweden (33.2%) assigned approximately three times as many of these certified deaths to non-puerperal causes as did the United States somewhat lessens the force of the condemnation of those uninformed propagandists who, to the disparagement of this country have cited Norway and Sweden as shining examples of countries where obstetricians know their business.

These figures show the futility of trying to compare the quality of obstetrical work in one country with that of another if the comparison is based on governmental statistics. While other sources of error in such comparisons could be pointed out this confusion in the classification of certificates showing more than one cause of death is a major factor in the wide discrepancies in the vital statistics of the reporting countries. The Census Bureau's Manual of Joint Causes of Deaths eliminates to a great extent, such discrepancies in statistics as between the states. We may hope that the next Conference on an International List of Causes of Death to meet in 1939 may do as much for international statistics.

However accurate the classification of puerperal deaths may ultimately be the only interest of the obstetrician is in its practical value. All he wishes to know is why there are so many puerperal deaths so that he may take measures to reduce the number of pregnant, parturient and puerperal women who die each year. What particular form the "statistical expression" shall take is of purely academic interest to the practitioner of clinical obstetrics. Whether it be expressed as "the cost in mother's lives in bringing in to the world 1000 live born babies" or as "the risk of maternity in terms of deaths of women of marriageable age for every 1000 pregnancies whether these terminate in live births still births miscarriages or abortions" or "by the difference between the mortality among the child bearing and that of the non-child bearing women"³ must be left to the statistician. From the point of view of the practicing obstetri-

*President's address delivered at the annual meeting of the New England Obstetrical and Gynecological Society November 22, 1932.

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cian whatever "statistical expression" is chosen and however the deaths are classified the classification should be such that deaths occurring during pregnancy, labor or the puerperium may be studied as a group irrespective of the primary cause of death and irrespective of the month of pregnancy in which death occurred. We all agree that deaths from heart disease in pregnant women or deaths from sepsis following self-induced abortions should not be called "obstetrical deaths" but all of the latter and some of the former are preventable deaths and are therefore of interest to the obstetrician even though they should not be charged against him. What sub-classifications are useful and desirable must be left to the statistician provided he remembers that statistics are but a means to an end and that end is to give useful information.

As soon as a pregnant woman places herself in the hands of a physician, whether he be a general practitioner or a specialist, he becomes responsible for her welfare until she has completed her puerperium. The specialist may share the responsibility if non-obstetrical complications are present or develop, but he cannot escape it. Many of the most serious problems which the physician has to solve have to do with the complications of pregnancy, namely, heart disease, nephritis, pyelitis, tuberculosis and other acute and chronic diseases, both medical and surgical. Many questions as to the treatment of these conditions can be answered only on the basis of statistical studies. Every certificate of death of a pregnant or puerperal woman, even though the cause of death be non-puerperal, should include a statement that the cause of death was a complication of pregnancy.

Death certificates and statistical tables tell us little or nothing. A death certificate giving puerperal sepsis as the cause of death is of little practical value. If we are to draw any conclusions which will be of use in a fight against a high maternal mortality we must know why the patient became infected. Was her resistance lowered by anemia, diabetes or other constitutional disease, was she harboring the gonococcus in her vagina or cervix, was she, or some member of her family, her physician or her nurse a carrier in the upper air passages of *Streptococcus hemolyticus*, did manual dilatation of the cervix or an unnecessary forceps operation or version before dilatation and retraction of the cervix open up wide ports of entry for the anaerobic streptococcus pyogenes already present in the patient's genital tract, did her physician have under his care a septic wound or a case of infectious disease at the time of her delivery, was the patient allowed to go so long in the second stage that she became exhausted, her resistance lowered and her tissue devitalized to the normally non-pathogenic vaginal flora or did

repeated examinations of the vagina transplant the non-pathogenic bacteria of the lower vagina, normally acid, to the normally alkaline cervix where they become pathogenic? When such questions as these are answered we shall know the ultimate causes of puerperal deaths and until we know the ultimate causes we are fighting in the dark. From the clinical standpoint, statistical tables which do not indicate *causes* rather than *results* are useless.

Only a detailed study by a personal interview with the physician while the history of the case is still fresh in his mind can give us any information of real value. Several such studies have been made and others are in progress. While there are many questions which they leave unanswered, they do indicate some points which need to be forcefully presented to the patient, to the medical student, to the hospital resident and to the physician—be he general practitioner, specialist or teacher.

Abortions All surveys so far made and all statistics compiled are in substantial agreement that approximately one fourth of all deaths due to strictly puerperal causes follow abortions. Of these one-third are spontaneous and two thirds are criminal, self-induced or therapeutic. It is somewhat irrelevant, perhaps, but it may be not out of place at this point to remark that self-induced as well as criminal abortions are really infected wounds and should be classified as deaths by violence and not as puerperal deaths. It is estimated that 700,000⁴ abortions occur annually in the United States. The average mortality rate for abortions in the civilized world is 21 per cent. An induced abortion is probably five times as dangerous as a full term delivery. In Magdeburg, Germany, the death rate from sepsis following abortions was seven times greater than that following childbirth. Here is one point of attack on maternal mortality, the education of mothers of the great danger of induced abortions.

Chronic Diseases Complicating Pregnancy About one per cent of all pregnant women have organic heart disease and six to eight per cent of women who die during pregnancy or the puerperium die of heart disease⁴. It is our belief based on our experience in our heart clinic at the Providence Lying-in Hospital that a pregnant woman with heart disease who has never had symptoms suggestive of decompensation can go through pregnancy and labor safely with but moderate limitation of her normal activities. If on the other hand she has edema of the feet and ankles, moisture at the bases of the lungs, shortness of breath on exertion and other signs of beginning decompensation even though she may never have been frankly decompensated, she will if untreated, grow progressively worse and the earlier in pregnancy the symptoms appear the worse the prognosis. If

the patient with this type of heart disease is properly managed by strictly limiting her activities with long periods of rest in bed at the slightest return of symptoms, she will probably do well. On the other hand if there has been decompensation previous to the pregnancy, decompensation will almost surely occur again and it can be prevented only by prolonged rest in bed with proper medication and may require early emptying of the uterus in the most conservative manner possible. The key, then, to the prevention of maternal deaths from heart disease is early recognition of the condition and prompt and adequate treatment. Equally true is it of other diseases complicating pregnancy, tuberculosis, chronic nephritis, hyper- or hypothyroidism, and the toxemias, that only by recognizing them at the earliest possible moment can they be most successfully treated. Here is another weapon of attack in our war on maternal mortality, the constant preaching to the women the necessity of competent medical supervision from the early weeks of pregnancy.

Analgesia I approach the next specific item in the program of education of the patient with some trepidation. In common with all physicians, particularly those past the half-way station in the journey of life, I have a dread of being considered old-fashioned. At the risk of being so considered, I am going to discuss briefly the subject of obstetrical anesthesia and analgesia from the viewpoint of what I consider the attitude the physician should take in discussing it with the patient. Here again the lay press has done its bit to embarrass the conscientious physician. It has done its best to persuade expectant mothers, and the profession too for that matter, that the obstetrician who will not promise the patient a painless labor is a brute. To shift, to some extent the onus of being old-fashioned to more distinguished shoulders I shall quote from the recently published Report of the Sub-committee on Factors and Causes of Fetal Newborn and Maternal Morbidity and Mortality.⁴ This is the report of a subcommittee of President Hoover's White House Conference on Child Health and Protection.

"Pain relief of the parturient is desirable but the problem is essentially different from anesthesia necessary for all operations. Relief given to women in labor must be absolutely devoid of danger to either mother or child. Of the various drugs used for this purpose, administered by mouth, rectum or subcutaneously, the overwhelming majority interfere with uterine activity and many pass into the fetal circulation.

"Necessity for the relief of pain is evident. If, however, the method of pain relief lengthens labor or makes its normal termination less likely, justification of anesthesia is questionable. Again, if the method of pain relief adds an ele-

ment of danger to the child,—such a method is not justifiable.

"By frequent charting of the fetal heart rate and adjustment of the oxygen content of the atmosphere inhaled by the mother, fetal anoxemia can usually be avoided. Whatever the method of pain relief used in obstetrics the tendency to reduce oxygen content of the fetal blood should be remembered and corrective measures instituted when indicated.

"The use of colonic instillation in a mixture of oil recently advocated by Gwathmey is at present experiencing great popularity. The concomitant use of morphine and magnesium sulphate, both extreme muscular relaxants makes the method highly undesirable in normal obstetrics."

All of which implies that many of the techniques more or less widely used demand special training and experience for their safe employment, require constant supervision of trained assistants in anesthesia and are therefore available except in a very limited number of cases, only in hospital practice.

Some years ago in discussing the Gwathmey technique with a prominent obstetrician in a distant city, I asked him what he did if a patient failed to deliver herself as soon as he had expected and the effect of the ether began to wear off. His reply was in effect, that another injection could be given but that as a matter of fact labor had usually progressed so far that he could go ahead and deliver. In other words in that particular clinic they were conducting the labor to suit the anesthetic instead of choosing the anesthetic best suited to the case.

I have singled out for comment the Gwathmey technique not with the thought that it is more or less dangerous than other forms of analgesia but because it has been exploited in the lay press and certain pharmaceutical houses are capitalizing the free advertising it has had and are pushing the sale of the ingredients in handy packages with literature that might tempt one to believe that the only requisite for its safe and successful administration is a right hand strong enough to compress a rubber bulb and insert a hypodermic needle.

What should we tell the patients who do us the honor of placing in our keeping their hopes for a successful labor and a healthy baby when they ask us about this or any other method of mitigating the pains of parturition? I believe we should assert our prerogative of leadership and, instead of servilely following the popular demand of the moment frankly tell them that our first concern is the safety of the mother and the safety of her child. That while we shall do everything within our power to alleviate the pains we will not promise a painless labor if we feel that by doing so we shall run the risk of injuring the mothers or endangering their babies. This subject of relief of pain in labor is one in

which the women are in need of education, not by the lay press, but by their medical advisers.

The problem of the education of medical students is a difficult one and must of necessity be left to the administrative and teaching departments of the medical schools. As one who over a period of some twenty years has had an opportunity in a fairly large lying-in hospital to see the end product of their efforts in the form of internes. I may be able to speak with some knowledge of their qualifications. That they are very poorly equipped to assume the responsibility of guiding any but the normal woman through pregnancy and labor, their teachers well know. Obstetrics is still an art and not a science. No art can be taught. It must be acquired, under instruction to be sure, but still acquired and that too, only by long practice. No medical school can allot to the obstetrical department either time or clinical material sufficient to make it possible to turn out graduates capable of taking care of any but normal obstetrical cases. If that is a fact (and I believe it is generally admitted to be so), the maximum time should be spent on teaching what normal obstetrics is, only such abnormal obstetrics as is required to contrast it with and emphasize the normal and the irreducible minimum on operative obstetrics. I am not conversant enough with the present teaching of obstetrics to know whether this is the policy generally followed. Probably it is.

What has been said of the teaching of students is true only to a lesser degree of the teaching of internes and any but long-term residents. The practice of allowing a short-term resident to decide if and when operative interference is necessary and turning over to him the delivery without adequate supervision is unjust both to the patient and to the resident. The patient has a right to the best judgment and skill available and the resident has a right to counsel and instruction. A year on the most active obstetrical services is too short a time in which to develop either mature obstetrical judgment or manual dexterity.

To deliver by operation, to demonstrate operative technique on a woman who would otherwise deliver herself normally is, in my opinion, reprehensible in the extreme. The injustice to the patient we can, for the purposes of the present discussion, ignore. It is the injustice to the resident of which I am thinking. Such a procedure minimizes in his mind the possible danger of any interference and fails to impress upon him the fact that the most important thing he can learn is not *how* to operate but *when* to operate. This is particularly important if after graduation he is going to practice, not in a hospital, but in his patients' homes, for the man with sound judgment and average manual dexterity will, in the long run, do better obstetrics

than the man with great manual dexterity and poor judgment.

If then, we are to improve our mortality records we must teach the future obstetrician first, what normal labor is, next *when* to operate and last of all *how* to operate.

In considering on what points we, as general practitioners and specialists, need to be educated, it is possible to discuss only a few of the most outstanding of our shortcomings. That we need education is evident. In spite of asep sis, anesthesia and all our modern aids to diagnosis and treatment, we have reduced but little the maternal mortality rate of a hundred years ago and that, too, not because we are dealing with a different type of woman but because we have failed to use wisely or have actually turned against our patients, the weapons which science has placed in our hands. A few years ago I should have resented such a statement but today, being better informed, I believe it to be true.

Prenatal Care Gardiner⁵ in the New York State Survey found that in 30 per cent of the cases investigated, there had been illness which was thought by the attending physician to have possibly affected the outcome. Heart, kidney, and blood diseases accounted for 52 per cent of these. She also found that only 19 per cent of the delivered women had visited a physician before the seventh month.

In another survey it was found that only 54 per cent of the urban white, 39 per cent of the rural white, 20 per cent of the urban colored and 11 per cent of the rural colored who died of puerperal albuminuria and whose condition was reported were in good or even fair condition when they were first seen by a doctor.⁶

Child-bearing is not an isolated experience in a woman's life. Her success or failure in the great adventure of motherhood depends upon the sum of all her past experiences and upon the outcome depends in no small degree her future health and happiness. Not until this thought has become rooted in the subconsciousness of every physician and every pregnant woman should we cease to preach the need of prenatal care.

Sepsis Ninety years after Holmes published his treatise on Contagiousness of Puerperal Fever and over eighty years after Semmelweis reduced his mortality rate in two years from 12.24 per cent to 1.27 per cent (later reduced to .85 per cent), 40 per cent of all puerperal deaths are due to septic infection and of all women who are delivered and die in the last three months of pregnancy 31 per cent die of sepsis.⁶ It has already been indicated that not all cases of puerperal sepsis are caused by infection introduced from without. Any operation in obstetrics is carried out in a field that cannot be

sterilized and to which an occlusive dressing cannot be applied. From the placental wound in the fundus to the skin of the perineum there is no bar to infection by the vaginal flora except the natural resistance of the tissues. The genital tract is traumatized to a greater or less degree in every delivery. The greater the trauma and the lower the resistance of the patient, the greater the danger of infection. If this fact were always in the mind of the operator there would be a reduction in the number of operative procedures and a consequent reduction in deaths from sepsis. It might result, too, in greater care not only in deciding between an operative and a non operative delivery, but also in the choice of the time when the operation should be done. The optimum time for a Caesarian section is before or at the very beginning of labor. The optimum time to apply forceps is after full dilatation and retraction of the cervix and not until the maximum amount of moulding and descent of the head has been accomplished, consistent with the safety of the mother and her child.

Forceps Answers to the White House Conference Questionnaire showed that in 223 hospitals reporting, the incidence of forceps operations ranged from 0.5 per cent to 81.1 per cent.⁴ Such a wide variation in the incidence of any operation is a sad commentary on the present chaotic state of the practice of obstetrics in this country. The average incidence of operative deliveries of all kinds in hospital practice would appear to be between 15 and 20 per cent. It would seem evident that an incidence of forceps deliveries above 10 per cent indicates a belief on the part of the operators that operative deliveries per se, are harmless. In analyzing eight hospital reports I found that the morbidity, based on the standard of each individual hospital was from two and a half to nearly five times as great as that following normal deliveries. Even though we have no concrete evidence to show that maternal mortality following forceps deliveries in well-equipped obstetrical hospitals is much higher than that following spontaneous deliveries it seems certain that a high incidence of operative deliveries with its greatly increased morbidity does cause an occasional death from sepsis and accounts for a vast amount of pelvic pathology following childbirth. If this is true in hospital practice, and it is to be noted that all the figures here quoted are from hospitals, it is undoubtedly true of practice outside of hospitals where it is extremely difficult to preserve a strict aseptic technique.

At the deliveries of 942 white women who died of puerperal sepsis those in charge of the deliveries reported that the technique had been aseptic in 40 per cent, an attempt at asepsis had

been made but had failed in 15 per cent, it had been clean but not aseptic in 36 per cent and dirty in 9 per cent.⁶ In 45 per cent of the cases, therefore, there had not been even an attempt at asepsis. Whatever may be said in defense of the results of "clean" obstetrics in spontaneous home deliveries, nothing can be said in its defense in operative deliveries. It is to be feared that the operative furor which dominates some of the obstetrical centers has an unwholesome effect on the young men who come under its influence and will shortly go into practice in communities where the hospital facilities to which they have become accustomed will not be available. It would probably be safer in home deliveries not to substitute for, but to supplement asepsis with antiseptics.

Caesarian Section In analyzing surveys and hospital reports covering over 43,000 cases I found that the incidence of Caesarian section varied in the different clinics from 5 per cent to 33.6 per cent.⁷⁻⁹ Four other surveys covering 262,853 cases show an incidence of 4.6 per cent to 12.8 per cent. Ill⁹ reports in an analysis of obstetrical work done in Essex County, New Jersey, that, if Newark City Hospital where most of the neglected cases are sent is not included, he found there had been sixty-five deaths in all other hospitals of which 24 or almost 40 per cent followed Caesarian Section. In a survey of Caesarian section in the Cleveland registration area covering five years, published in 1932, Skeel and Jordan¹⁰ found an incidence of 1047 Caesarian sections in 45,650 hospital cases (1 to 44) with a mortality of 7.15 per cent. The incidence in the total cases delivered in that area, both hospital and house was 1 to 90. They also found that the operative or basic mortality was 1.86 per cent. Any operation carrying a mortality rate of 7.15 per cent of which 2.6 per cent is due to the operation per se, and not to the condition for which it is done never should be performed except on definite and serious indications. That at the present time the indications are not definite, an incidence varying from 5 per cent to 14.6 per cent⁴ in hospital practice clearly shows.

Bleeding and Toxemias of Pregnancy It is equally true that there is no unanimity of procedure in the treatment of bleeding and toxemia in late pregnancy. Accouchement forcé (considered by most qualified obstetricians never to be justified) still exacts its toll of maternal deaths. Caesarian section is employed in the treatment of these conditions without proper consideration of the condition of the patient or the type of anesthesia to be employed. In 534 deaths following Caesarian section it was found that the indication for operation was eclampsia in 31 per cent, pre-eclampsia in 9 per cent and uremia in 5 per cent. Placenta praevia and premature separation of the placenta accounted for another 10 per cent. These two conditions,

toxemia and bleeding accounted for 55 per cent of all deaths following Caesarian section. The report of the Study of Maternal Mortality in Fifteen States, says that women with recognized toxemia were kept under observation for long periods and were delivered by emergency Caesarian, women having convulsions were carried long distances to hospitals and operated on immediately on arrival, "both inexcusable procedures."

Let me quote a few published statements of writers on obstetrics

1 "To expect the forces of the uterus and abdomen directed toward the pelvis and in line with the child's body to provide a rotary movement of the fetal head sufficient to turn it 135 degrees is scientifically unsound

"At the thirty-sixth week of pregnancy a posterior position of the occiput is present in 45% of vertex cases examined. Out of 18,500 presentations it was found that the posterior position remained so during labor in 363 cases, this being 1.95%." ¹²

2 "Prolonged labor occurred less frequently in posterior positions than in anterior positions in my service in the same period of time—due to timely interference" ¹³

"In a total of 2160 deliveries there were seven persistent occiput posterior positions. What a pity it is that the world cannot understand that occiput posterior positions are best let alone" ¹⁴

3 "If there are sins of commission in the new school they are many times balanced by the sins of omission in the old school" ¹⁵

"In New York State the gain which has been made by prenatal care, antenatal propaganda, better, cleaner and more conservative obstetrics in the rural districts, is offset in the hospitals of the urban areas by the great increase in operative deliveries and the complications which follow" ¹⁶

4 "It is really impossible to say a great deal about obstetrics in the United States in a short time. There exists such contrast among the obstetricians and their methods that a generalization from what I saw in one or another of the clinics would give an entirely distorted impression. The strongest conservatism is encountered on one side and the greatest radicalism on the other, the latter predominating" ¹⁷

To reduce the present high mortality rate by the education of the profession seems an almost hopeless task until the leaders of the profession are more nearly in accord on the ultimate causes of maternal mortality and the proper treatment of the specific items which keep up the mortality. The advocates of so called modern and old school obstetrics must fight it out. This is not the place to get into that fight but it is perhaps allowable to point what, in my opinion, is the proper attitude while the fight is going on

A radical procedure which may be justified in a modern obstetrical hospital with its rigid

aseptic technique and a swarm of trained assistants always on duty, may be absolutely contraindicated in a private house where neither adequate equipment nor skilled assistants are available. Writers whose experience has been limited to hospital practice seem at times to forget this distinction. The practitioner who does obstetrical work in private houses should never forget it

An obstetrical operation is a surgical operation. No physician can be skilled in all branches of medicine and the practitioner who is not skilled in the art of obstetrics should no more hesitate to call in a consultant who is competent, than he would to call a consultant in any other surgical problem. The consultant should be called in as he is in other branches of surgery not only to perform the operation but to give counsel as to the advisability of interference, the time when interference is demanded and the type of operation to be employed. Too often if a consultant is called at all, the diagnosis is made and his course determined before he has even seen the patient. Such a procedure reduces the consultant to the rôle of a mere mechanic

If an obstetrical problem arises, no qualified consultant is available and the attendant, as so frequently happens in rural practice, must rely on his own resources, he should in choosing his course of action, give due consideration to his own limitations and to the circumstances under which he must work. Prophylactic forceps, in interference, as a routine in occiput posterior positions early in the second stage, have a place, if at all, only in hospital practice

Many obstetrical conditions require for their adequate treatment early hospitalization. Excessive vomiting in early pregnancy, heart complications, toxemia and vaginal bleeding are such conditions. There seems to be a reluctance on the part of the patient to accept and, on the part of the physician to insist upon hospitalization of these conditions until the condition of the patient has become serious. Until this prejudice is overcome, lives will be lost which otherwise might have been saved and to that extent a possible reduction in our maternal mortality rate will be prevented

An obstetrical operation with the possible exception of the extraction of a head already distending the perineum can be done more safely in a hospital than in a private house. An obstetrical operation being a surgical operation, the physician should no more hesitate to insist that his patient go to a hospital for an obstetrical operation than for any other surgical operation

That, as a rule, mortality records in obstetrical departments of general hospitals are higher than in obstetrical hospitals or the home may be due, among other factors, not so much to the danger of air-borne infections as to the fact that

while in the home many considerations may urge delay in operating until there is a definite indication, in a hospital an operation is so easy and, to the unthinking, so safe that a few unqualified and inexperienced men are tempted to interfere unwisely in the normal process of labor and thereby raise the hospital mortality rates.

If what I have said seems pessimistic and fault finding, it is due to the subject I have discussed. If we are to lower the maternal mortality rate we must find our faults and our mistakes before we can correct them and how can one point out faults and not be fault finding? There are many bright spots on the obstetrical horizon. It would be pleasant to point out hospital after hospital where in spite of the grave emergency cases treated, the mortality rate is thirty or less per 10,000 living births, and less than half the country-wide rate. In such hospitals prenatal and postnatal clinics, anesthesia, analgesia, sepsis, forceps, Caesarian section, and all the modern aids to diagnosis and treatment are weapons which are being wisely used. That they are not always wisely used, our mortality rates show. It is their misuse that must be found and exposed and that cannot be done by the piling up of undigested governmental statistics. It can only be done by such studies as have been made in Cleveland and New York (among others) and by the Children's Bureau in Washington where they have gone back of the death returns to the individual cases. No vague campaign of education will do. Specific problems must be solved and specific abuses attacked. And let it not be forgotten that, if the maternal mortality is lowered, it will follow as the day follows the night that the whole standard of obstetrics will be raised.

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HEALTH INSURANCE IN ENGLAND

BY SIR HENRY B. BRACKENBURY, M.D.*

TWENTY-ONE years' actual experience of giving and receiving medical advice and treatment under a system of compulsory and contributory national health insurance has had certain definite results both upon the community and upon the medical profession. It must be understood by American readers that the British health insurance system has from its beginning in 1912 included in its medical benefits only the services of a general practitioner in the patient's home or at the doctor's office, that it does not include the services of specialists or hospital care. In addition to medical benefits, cash benefits amounting to a part of the

wages are provided the insured person for a specified period during sickness. All persons employed at manual labor and all other employed persons with annual incomes of less than £250 are legally required to insure under the Act, these employees paying themselves approximately 40 per cent of the total cost, the employer paying about the same amount, and the state the remaining fifth. Over 15 million persons are thus insured under the law and about 15,000 physicians have elected to serve them under its provisions, these physicians ordinarily giving only a part of their time to insurance practice and carrying on private practice also.

On the whole, and leaving out of account for the moment those features of the British system which are not directly concerned with the provi-

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sion of medical attendance and treatment, the results are beneficial to both and when the expression "on the whole" is used it is not intended to imply that the benefit is just on the right side after nicely balanced consideration, but merely that there are some points of disadvantage which may be set over against an overwhelming preponderance of advantage. That this is so may be judged from the official resolution passed by the Representative Body of the British Medical Association almost without dissent "The measure of success which has attended the experiment of providing medical benefit under the National Health Insurance Acts system has been sufficient to justify the profession in uniting to secure the continuance and improvement of an insurance system." It is some eight years ago that this resolution was passed, but since then it has been endorsed, further resolutions have been adopted pressing for an extension of the system to bodies of persons who are not at present included in it, and by a growing conviction, born of intimate experience, it is acknowledged that any suggestion of the abolition of the scheme would be received by an overwhelming and emphatic protest from the profession and insured population alike.

It is important to emphasize the official and definite character of these and the following expressions of opinion of the medical profession of Great Britain in view of the different and incorrect impressions which have been conveyed to American physicians in certain British "correspondence."

There is a similarly official record of what the medical profession believes to be the general benefits to the community which have been either directly due to, or greatly accelerated by, the National Health Insurance scheme. In the Memorandum of Evidence which the British Medical Association presented to the Royal Commission on National Health Insurance they are thus enumerated: "(a) large numbers, indeed whole classes, of persons are now receiving a real medical attention which they formerly did not receive at all, (b) the number of practitioners in proportion to the population in densely populated areas has increased, (c) the amount and character of the medical attention given is immensely superior to that formerly given in the great majority of clubs, (d) illness is now coming under skilled observation and treatment at an earlier stage than was formerly the case, (e) the work of practitioners has been given a bias towards prevention that was formerly not so marked, (f) clinical records are being provided which may be made of great service in relation to public health and medical research, (g) cooperation among practitioners is being encouraged to an increasing degree, (h) there is now a more marked recognition than formerly of the collective responsibility of the profession to the community in respect of all health matters." These are described as "immense gains," and

further experience has not tended to minimize the value of any of them. The only qualification perhaps required is that, except in a few instances, the authorities have failed to make proper use of the potential value of the clinical records made by practitioners. It may be added that in a number of rural areas it has been found possible to maintain medical attention in places which would otherwise have been left derelict.

Such are some of the main benefits to the community. It is natural to ask also whether there is any evidence, as yet, that the general public health has been enhanced as a result of the working of a National Health Insurance system. This is a question, however, which it is impossible to answer, and probably will always be impossible to answer, with any degree of confidence. There can be but little doubt that during the past twenty-one years, in spite of war and economic calamities, the national health has improved, but it is quite impossible to separate the effects of the medical benefit insurance arrangements from those of other agencies which have contributed, probably more effectively, to such a result—for example, an increase of knowledge of medicine and ancillary sciences, a more effective and widespread public health administration, a much greater realization of the importance of health matters, and education in personal, domestic, and industrial hygiene. It will be realized, however, that the beneficial effects of these other agencies must have been largely augmented and reinforced by the activities of the physician doing insurance work, with out whose services they would have failed of practical application in the homes of the people.

On the other hand, the fact that the provision of cash benefits payable during incapacitating sickness has led to increased claims cannot be taken as indicating any actual deterioration in the general health. It must be borne in mind that the insurance scheme applies to not much more than one third of the population, that the effects of prolonged unemployment and the aftermath of war are still with us, that the propaganda in favor of securing early medical attention and of realizing the importance of minor illness must at first tend to swell the periods of sickness, and that the recent actual prolongation of life almost necessarily increases the total of such periods. These and other purely medical considerations fully account for an increase in sickness claims. Whatever be its actual effects on the public health there is no doubt at all that the insurance scheme has brought to large numbers of persons the advantage and comfort of having a family physician or private medical adviser in whom they have confidence.

The results to the medical profession itself have also been, in general, advantageous. The

system has, in almost all areas and in the case of a large proportion of individual practitioners, increased the feeling that we are colleagues rather than rivals, and has brought about a more conscious relationship between family practice and various aspects of public health service. These are considerable gains. Financially, too, the effects have been beneficial. The aggregate income of members of the profession practicing under the scheme has been largely augmented. There are probably thousands of general medical practitioners today who, without the insurance scheme, would not have been able to earn by the exercise of their profession a sufficient income on which to live. It must not be understood that any money is coming to them through these state insurance arrangements which they have not fully earned. It is the greatly increased amount of work which the scheme provides for a guaranteed reasonable (though some think not a fully adequate) payment that has led to this improvement. In addition, a large number of physicians find it a relief and comfort that they can now give a fuller attention to many of their poorer patients without the thought that those patients will be afterwards distressed by the presentation of a bill. There is not evidence that the general quality of professional work has in any way deteriorated. No doubt, as in other branches of medical work, there are some who are less skilful and less conscientious than others, but comparing like with like, the best with the best, or the average with the average, it is safe to say that the quality of the service rendered is at least as high among insurance doctors as it is say, in private practice or in hospital out-patient departments.

It is not to be denied that there are certain drawbacks, dangers, or disquieting features which may be found under an insurance scheme for medical benefit. The most commonly mentioned among those which are real, is the multiplicity of rules and regulations which it involves. No doubt there is a tendency to multiply and complicate these unnecessarily, but it should be realized that most of them arise from three extremely valuable and probably unique features embodied in the English system. These are (1) Every registered medical practitioner has the right to be a member of the service unless and until it is proved that, because of misconduct, his continuance therein is detrimental to the service as a whole, (2) the close approximation of the conditions of the service as between doctor and patient to those which obtain in private practice, (3) the considerable share assigned to the profession itself in administration. Because of, not in spite of, the confidence in the profession which these features disclose, provision has to be made for the occasional delinquent. If the state has no right

to choose which physician shall take part in the service machinery has to be established for dealing with anyone who conspicuously fails in his duty. If the state has limited its function to bringing together doctor and patient, leaving them free thereafter to act in accordance with recognized or traditional methods, it must provide means whereby, in case of dispute, each may have a square deal. If the state leaves purely medical matters to be judged by a purely professional body, there must be some authoritative delimitation of the respective spheres and some prescribed means for action. All these statutory requirements, rules, and regulations, need not trouble the physician any more than the ordinary requirements of the penal code trouble the law-abiding citizen. In fact, they do not worry him overmuch. They exist largely for his own protection. There is however a certain type of mind which tends to be distracted by them, and therefore they should be made as simple and few as possible.

Only two other drawbacks or dangers need be considered—the one affecting the attitude of certain members of the profession, the other affecting the mind and conduct of certain insured persons. The one is that the system does to some extent facilitate the procedure of commercially-minded practitioners and the exploitation of unwary members of the profession by ingenious laymen. There is no doubt that insurance practices are more easily and more certainly transferable than ordinary private practices. On the occasion of any such transfer each insured person on a physician's list is afforded the opportunity of choosing another physician but in fact only a very small proportion of them (perhaps 3 to 5 per cent) avail themselves of this at an early date thereafter. This allows of such practices being worked up in suitable areas and then, perhaps at short intervals being bought and sold as commercial propositions. This danger, however cannot be said to be prevalent, and it is one which knowledge and experience should easily combat.

The other drawback is that with a quite small proportion of insured persons, their attitude towards their physician may be changed for the worse. Instead of regarding him as a confidential friend and adviser there are a few who come to demand his services as a business right and may be critical and suspicious lest they should not secure their full due. If there were any widespread effect in this direction it would be enough to condemn the whole system, but in fact the enormous majority of insured patients enter into relations with the physician of their choice in exactly the right spirit, and such an attitude as that described is not common and can be readily dealt with by any wise practitioner.

Other supposed drawbacks or dangers are either unreal, or trivial, or not peculiar to in-

insurance practice but more or less common to many forms of medical work

In conclusion, if, as the result of the British experience, one were to offer any advice to members of the profession or other persons interested in public health elsewhere, one would feel inclined to say with a good deal of emphasis, that, whatever variation there might be in many details of any proposed insurance health service, certain conditions should be regarded as essential for smooth working and success

First the three unusual features of the English scheme mentioned above should be regarded as absolutely fundamental—the right of all doctors to be members of the service, the absence of interference between doctor and patient as such when once this relationship has been brought about, the close and appropriate association of the profession itself with the administration

Secondly, the scheme for provision of medical benefit (i.e., medical advice and treatment) should be separated as completely as possible, both financially and administratively, from any insurance provision for cash payments of any kind

Thirdly, the scheme should, from the beginning, make provision for a full medical service, not merely for general practitioner attention but also for consultant, specialist, and other ancillary services, and, where circumstances allow, for institutional treatment also. Because of historic reasons which govern the provision and maintenance of the institutional care of the sick

in Great Britain, it is found impossible in this country to incorporate hospital provision as an integral part of an insurance scheme, but practicable, however, to secure such provision in direct and intimate association therewith.

Fourthly, the scheme should be administered as simply as possible in topographical areas, and not through a multiplicity of "approved societies." In Great Britain, owing to the vested interests which have already been established, it is recognized that Approved Societies may require to be represented on whatever local committees administer the scheme. Most of the difficulties and complications that have from time to time arisen under the existing English scheme have been due to the fact that these last three conditions have not been fulfilled, and the British Medical Association in the spring of 1930 issued "Proposals for a General Medical Service for the Nation," incorporating the above stated general principles and urging the extension of the sickness insurance law to cover not only the insured employees themselves but also the members of their families, to provide the services of specialists as well as of general practitioners, and to arrange for hospital care, as measures for increasing the provision which the present law furnishes for attending to the health of the people by securing full medical attention for them. Financial stringency has prevented any attempt to establish such provision during the past three years, but the scheme has been very favorably received in general, and it is under discussion by societies and authorities interested in the public health

SNAPPING THUMB IN CHILDHOOD*

Report of Eight Cases

BY HENRY W HUDSON, JR, M D †

THERE are several lesions which may cause flexion deformity of thumb or fingers. Among them are stenosing tendovaginitis, alterations in the phalanges or inter-phalangeal joints, peripheral nerve injury, neoplasm of tendon or tendon sheath, cicatricial and ischemic contractures, and division of opposing tendons. Since effective treatment presupposes recognition of cause and, since in a recent experience with one etiologic factor a correct diagnosis was made in none of eight cases before hospital entry, consideration of that type is pertinent. Furthermore the observation of eight cases in children within a two-year period is a unique experience if one may judge from standard texts and the scant literature. Certain conclusions may be drawn from this experience which are

at variance with the usual statements concerning etiology.

The deformity, with which we are concerned, consists in a flexed position of the distal phalanx of the thumb which is overcome by active extension with difficulty, if at all, and recurs promptly. Passive or active (when possible) extension is accompanied by a palpable, and frequently audible, "snap" or "click" which is often painful. Palpation of the flexor tendon frequently reveals a localized fusiform thickening just proximal to the metacarpo-phalangeal joint.

The diagnosis is made readily without elaborate investigation and a simple surgical procedure is effective in the relief of deformity.

Compere,¹ in a recent report, vividly describes his case, which except for the age of his patient, appears to be identical to those we have seen. His illustrations are very clear and worthy of examination. He classifies his case as one

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of tendonitis stenosans and apparently considers flexion deformity due to local tendon enlargement or to local tendon sheath stenosis as fundamentally the same. He separates this condition, however, from that described by de Quervain² as limited to the common tendon sheath of abductor longus and extensor brevis pollicis tendons. The condition described by de Quervain was later shown to involve any of the tendon sheaths about the wrist or hand. Finkelstein³ was able to produce this lesion in rabbits by trauma or by chemical injury and regarded it as the result of aseptic inflammation. He emphasized that the pathologic change is fibrous thickening of the tendon sheath and states that *it is rare for the lesion to occur in the tendon itself*. In one of his cases a localized tendon enlargement was noted. Both Compere and Finkelstein found little American literature concerning this lesion, but both felt it was not uncommon. Compere reviewed forty cases and reported an additional one. Of the forty, *only eight were six years of age or less*, and thirty-three of the thirty-six in which the sex was stated occurred in females¹. Seventeen of the cases resembled those we have seen.

In Keen's⁴ Surgery the author offers the names trigger-finger, and lock-finger, and states that it is rarely congenital and is more often associated with trauma, gout, overuse, and arthritis deformans. He advances circumscribed tendon thickening, new growths, protuberance of joints, and narrowing of tendon sheath as etiologic factors. Da Costa⁵ describes trigger-finger, jerk-finger, lock-finger, snapping-finger, as associated with rheumatism, ganglia, enchondromata, tendon synovitis, tendon sheath thickening, and (quoting Tubby) enlargement of tendon. Babcock⁶ speaks of snap-finger, trigger-finger, spring-finger, as affecting, in order of frequency, the middle and ring fingers, the thumb and index finger. He mentions tendon callus as causative in 90 per cent, and adds contracture of sheath, sesamoid bone or ganglion and alteration in joint surfaces as other causes. Ochsner⁷ states that the condition is rare, that it may affect fingers or thumb, and that it is due to localized tendon thickening or sheath narrowing, or both. Bickham⁸ recognizes the lesion and recommends shaving the tendon or enlarging its sheath or excising the *obstructing nodule*. Ashurst⁹ gives the usual cause as a *fusiform thickening* of one of the flexor tendons. Bunnell¹⁰ describes a *small benign nodule* containing giant cells and believes it the result of slight trauma. Homans¹¹ calls attention to Nélaton's "doigt à ressort" described about 1850 and states that the patients are usually elderly. All agree that the condition is rare in childhood and Finkelstein stresses its relation to manual work. It is usually stated to be much more common in the female.

Cotton¹² reported a case of trigger-finger in

which operation was successful and stated that up to that time (1911) there were about 160 cases on record with operative data in forty. He added "a couple of cases have been reported as congenital in origin". Most, however, were middle-aged persons and the female was more frequently affected than the male. Trauma and occupation were regarded as important factors. Cotton emphasized that the important thing was disproportion between the tendon and its sheath and stated that this was possible either from localized tendon enlargement or localized sheath stenosis.

In contradistinction to the usual statements regarding age, sex and cause, we offer eight cases (two bilateral) seen within two years*, all occurring at age three or earlier, with no distinctive sex incidence, and all with the same etiologic factor—localized tendon enlargement leading to disproportion between the tendon and its sheath. In all these the flexor pollicis longus was affected. In only one instance was there a definite history of trauma and in no instance had the fingers or hand been used in an abnormal fashion. In one case a familial incidence was recorded. Six of the eight cases, including both the bilateral instances, were proved by operation.

CASE REPORTS

No 150401. A. C. a white female of 4 9/12 years reported to the Surgical Out Patient Department June 23 1931. About two years before the child had struck her right thumb "end on" against an opening door. She cried for a short time and then returned to play. About one week later the mother noted that the child held her spoon awkwardly. She was advised to bathe the thumb in hot water for twenty minutes each day. Under this treatment the thumb could be extended easily but within 10-15 minutes it would again become flexed. Later the thumb remained flexed and if passively extended, was painful.

On examination the distal phalanx was held flexed at about 45 degrees. Efforts to extend the phalanx were accompanied by pain and the examiner considered the tendon short. Abduction was limited with the phalanx flexed and there was further limitation of abduction if the phalanx was extended.

Operation was performed July 27. The tendon of the flexor pollicis longus was exposed. A "thickened substance resembling cartilage" was noted in the tendon opposite the metacarpo-phalangeal joint. This was removed, the wound sutured and the thumb splinted in an extended position.

Active motion was instituted 24 hours later. The wound healed well and the child was discharged August 4.

Active extension was possible within 48 hours after operation. The child was followed until September 1933 (22 months). Movements of the thumb were considered normal.

Histologic examination of the excised tissue (S-31 237) showed fibrous and fatty tissue, the fibrous tissue resembling scarred tendon.

*During this period an additional patient was seen in whom the flexor sublimis digitorum (III) was similarly affected.

No 150875 S B a white female of three months reported to the Surgical Out Patient Department July 6, 1931 because of a deformity of the thumb noted one week earlier. The terminal phalanx of the right thumb was held flexed at about 45 degrees but could be passively extended. The tendon of the flexor pollicis longus was considered "tight". Passive extension was recommended and the infant was followed for three weeks during which there was improvement. An attempt to follow this patient was unsuccessful.

No 151701 F I a white male of six years reported to the Surgical Out Patient Department July 30, 1931. From infancy (one year) his mother had noted his inability to extend the distal phalanx of either thumb. There had been no pain and he had suffered no inconvenience until he entered school when it was difficult to teach him to hold a pencil. A similar flexion deformity was noted and attempts to extend the phalanx were unsuccessful. When forced toward extension, the thumb dislocated at the metacarpophalangeal joint. Again, the examiner considered the tendon to be short.

On August 8 the tendon was exposed. Opposite the metacarpophalangeal joint the tendon was thickened and could not be moved freely. A segment of the sheath was removed with relief. Similar operations were done on the two tendons. The tendon thickening was more marked on the right side.

Active motion was allowed within 24 hours. The wounds healed well and the boy was discharged in ten days with full motion in the left thumb but with slight loss of full extension on the right.

He was followed until October 26 (two months). At that time the function of the left thumb was normal. The right thumb was extended but there was loss of flexion.

No 149745 H D a white female of 1 5/12 years was admitted to the surgical wards November 10, 1931 for repair of an umbilical hernia. An incidental observation was a deformity of the left thumb whose distal phalanx was held flexed at 45 degrees and could not be extended actively or passively. No operation was performed on the thumb but exercises were prescribed. On September 15, 1933 (22 months later) there was no improvement. Operation has not been done because of a social problem.

The mother, maternal grandfather, and maternal great grandmother were all said to have "curved" little fingers which could not be "straightened"

No 153797 R McM a white male of 4 6/12 years was admitted to the surgical wards January 22, 1932. At 1 3/12 years, without history of injury, a flexion deformity of the right thumb was noted. It persisted, without change, despite forceful passive extension and splinting carried out on several occasions a year before he was brought to the hospital.

The typical deformity was present, active extension was impossible, and one examiner considered the tendon prominent.

January 22, under ether anesthesia the distal phalanx was extended. Extension was accompanied by an audible and palpable "snap". A local tendon enlargement was palpable. A splint was applied to maintain extension. Within a few hours the child had loosened the splint and his deformity had recurred. The following morning without anesthesia, the phalanx was again extended, again with an audible and palpable "snap" and transient pain. No splint was applied. In two hours there was recurrence. No swelling followed either manipulation.

January 26 operation was performed. A globose enlargement of the tendon of the flexor pollicis

longus was demonstrated. It caused disproportion between tendon and tendon sheath. A segment of the sheath was excised.

Active motion was allowed in 24 hours. There was relief of deformity. The child was followed for 21 months. Motion was normal.

No 107404 O A. a white female of 6 4/12 years entered the surgical wards September 8, 1932. When she was about two years old, her mother noted that the left thumb was not straight. This persisted. At age three a similar appearance was noted on the right side. From time to time the child would passively extend these distal phalanges, but flexion of 45 degrees promptly returned. There was no pain. There was no history of trauma or infection.

The usual deformity was present on either side. A firm tendon enlargement was palpable opposite either metacarpophalangeal joint.

On September 9 both tendons were exposed and a fusiform enlargement noted "just distal to the point where the tendon sheath began". The sheaths were incised which allowed the enlargement "to slide freely back and forth" and "permitted complete extension". Splints were applied for 24 hours. Thereafter active motion was allowed. Within three days normal motion was present.

On September 23 and 30 normal motion was present. On April 20, 1933 she reported with a recurrence on the right side. The movements of the left thumb were normal. The recurrence was said to have been noted six weeks after operation. It resembled the original deformity except that local tendon thickening was not palpable.

On August 17 the tendon of the right flexor pollicis longus was again exposed. The local enlargement present a year before was no longer present. With the distal phalanx completely extended the tendon was free to move in its sheath.

The child was discharged, unimproved, August 26. On September 18 she reported with a wound infection which had developed during chicken pox and had been discharging for several weeks. A silk suture was removed. On September 21 the wound was healed. The left thumb was normal. There was flexion deformity of the right thumb.

No 166166 D B a white male of 2 1/2 years was admitted to the Orthopedic Service on January 4, 1933. Two months earlier a flexion deformity of the right thumb had been noted. There was no history of preceding injury or illness. No abnormal use of the thumb had been noted. The child was a thumb sucker but this was confined to the left and not to the affected thumb. The deformity remained unchanged from the time it was first noted until admission except for slight temporary improvement under massage.

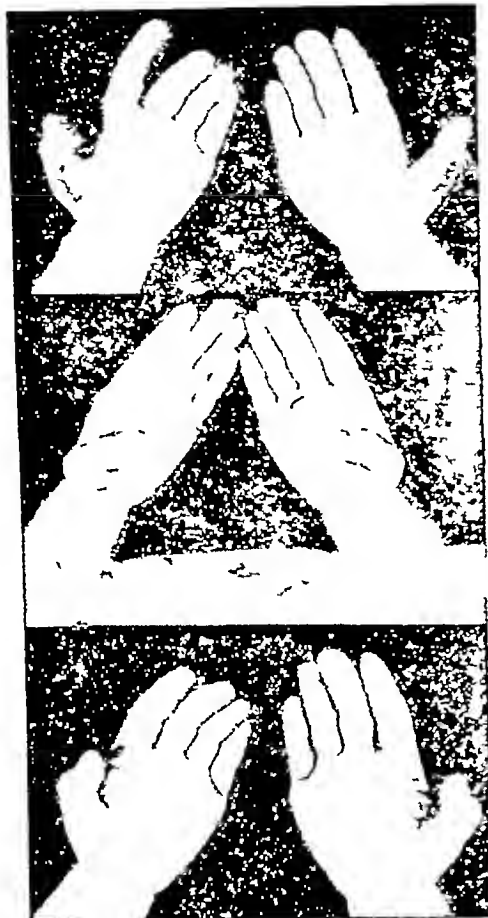
Local examination revealed a 45 degree permanent flexion deformity of the right thumb. Flexion was not limited but extension was possible to 145 degrees only. Passive extension to nearly 180 degrees was possible but the 45 degrees of flexion promptly recurred.

On January 6 the flexor tendon was exposed and its sheath incised. "In the deep portion of the sheath at the metacarpophalangeal joint a small fibroma" measuring about 0.5 cm in diameter was found. It was adherent to the tendon. It was removed and immediately full extension was possible.

The child was followed until September 30 (nine months). The flexion deformity was entirely corrected but there was loss of active flexion of the distal phalanx. Other motions were normal.

The histologic report (S 333) follows: "One section shows heavy bands of dense connective tissue in which few nuclei are found. At one edge the

fibrous tissue merges with an area of hyalin cartilage. In the transition from the connective tissue to the cartilage there is a small amount of fibro-



The lower photograph shows the flexion deformity of the distal phalanx. The upper two show the active motion possible two days after operation.

cartilage noted. At some distance from the area of cartilage just described there is a small amount of fibrocartilage living in connective tissue and merging gradually and almost imperceptibly with

the fibrous tissue. The picture is consistent with a congenital anomaly of development and can be best described by the term cartilaginous transformation of fibrous tissue."

No 172273 R B a white female of 1 10/12 years was admitted to the surgical wards on June 27, 1933. For two months, flexion deformity of the left thumb had been noted. There was no history of trauma. At times active extension had been possible but more frequently the distal phalanx was flexed at about 45 degrees and could not be extended. A palpable localized enlargement of the flexor pollicis longus was present opposite the metacarpo-phalangeal joint.

On June 28 the tendon was exposed through a one inch incision, the sheath was incised and an oval localized tendon enlargement demonstrated. The sheath was resected for about 1/4 inch.

There was immediate relief of deformity and motion was normal.

The child was followed until September 16 (3 months). Motion was normal. The tendon thickening palpable before operation was no longer palpable.

This experience suggests that those instances of snapping thumb or finger due to localized tendon enlargement represent instances of developmental aberration in the tendon or its sheath, or both, possibly with hereditary transmission, and that age, trauma, and occupation are contributory and not causative factors.

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STRANGULATED INGUINAL HERNIA, WITH UNUSUAL COMPLICATIONS, IN AN INFANT OF FIVE WEEKS

Report of A Case

BY J. L. GOLDEN, M.D.,* AND H. H. HAMILTON, M.D.*

WH. a well developed and well nourished male infant five weeks of age, full term normal delivery breast fed present weight of 8 lbs 2 ozs., with no previous history of illness, was brought to the hospital by his mother, with the following history:

Friday morning two days before entry the patient was irritable crying hard and often. The irritability continued throughout the day, but there was no vomiting and the bowel movements were nor-

mal. The following day vomiting began and occurred a few minutes after each feeding. It was projectile in nature. Sunday morning the day of entry the diaper was noted stained with pink fluid. There had been no bowel movements since noon the day before. Vomiting persisted and was now brownish in color. The odor was not noted. For the first time, 48 hours after onset of symptoms, a mass the size of a walnut, was noticed by the mother in the right groin.

On admission a slightly dehydrated, drowsy infant was presented. Head, chest, and extremities showed no abnormalities. Extending from the mid-

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on the right was an ovoid mass about two inches long and one inch in diameter. The skin was red dened over the lower half of the mass, and the redness extended down over the entire right half of the scrotum. It did not transilluminate, was indurated, and showed a slight amount of pitting edema. When it was touched, the child cried out. Attempts at reduction were considered inadvisable. Rectal temperature on admission was 99.5°, pulse 140, WBC 15,000. The patient cried out sharply and writhed for a few seconds every two or three minutes, remained quiet between the attacks, and often dozed off to sleep.

Preparation for operation was made at once. Shortly after entry a small amount of greenish material was vomited. A soap suds enema returned with good results. The preoperative diagnosis was strangulated right inguinal hernia.

OPERATION

Under ether anesthesia, the field was prepared with a mercurochrome acetone-alcohol solution, and a two and one half inch incision was made one-half inch above and parallel to Poupart's ligament. The tissue layers were identified and divided down to the inguinal canal, where a hernial sac about two inches long and one inch in diameter was found extending from the internal inguinal ring into the scrotum. On opening the sac, a small amount of sero-sanguineous fluid escaped. The right testicle, with the spermatic cord, was found included in the sac, and these structures were gangrenous up to a point about one-half inch from the internal ring. The testicle had the appearance of a small, ripe olive. Superior to the testicle was about two inches of small bowel, the ileocecal valve, and a small portion of the cecum in the sac, forming a loop extending down to the testicle. On separating the loop of bowel, the appendix was exposed lying free in the hernial sac, markedly injected, porky and edematous. The appendix and its mesentery were ligated with atraumatic catgut, removed and the stump carbolyzed. It was found impossible to reduce the herniated bowel which was moderately injected and edematous, but evidently in a viable state, until the internal abdominal ring was enlarged superiorly. Reduction was then perfected, and the neck of the sac closed by mattress atraumatic sutures. As circulation in the testicle and spermatic cord had shown no tendency to return, these organs were next removed. Anatomical repair was then done, the external oblique fascia being overlapped and plied. Dermal suture was used on the skin. A small rubber wick was inserted into the scrotum

through the lower end of the wound and left in place for 24 hours. A collodion dressing was applied.

PROGRESS

The temperature rose to 103.5° on the day following operation, and there was a watery diarrhea of about twelve bowel movements during the first 24 hours. Small clyses and paregoric were administered. On the fifth day, the temperature was normal and remained so. The sutures were removed on the seventh day, and the patient was discharged the sixteenth day postoperatively with the wound entirely healed, and a weight gain during his stay in the hospital of 14 ounces.

PATHOLOGICAL REPORT

"On section, the testicular tissue is found to be extremely hemorrhagic. The normal anatomy cannot be made out in the gross. The appendix measures 4.5 cm. in length and 6 mm. in diameter at its widest portion. There is moderate injection of the external vessels. On section, the wall is found to be of normal thickness, the lumen is patent and contains homogenous material.

"Sections microscopically through the testicular tissue show a marked acute inflammatory change, characterized by hemorrhage and polymorphonuclear infiltration. The tissue contains numerous, large, dilated blood vessels filled with red cells. The spermatic cord shows a similar microscopic picture. The appendix shows evidence of an acute inflammatory process. The vessels of the serosa are markedly injected with foci of perivascular infiltration. It is accompanied by considerable edema. There is no evidence of any malignant change in the tissue submitted for examination.

"Pathological diagnosis: Acute inflammation of appendix. Acute inflammation of testicle, probably due to torsion." (The possibility of torsion was considered at the time of operation, but there was no evidence of such a condition.)

We have reviewed the literature during the past five years, both American and foreign, and find no cases of this type reported. There have been, however, five cases of appendicitis with strangulated hernia, which have been reported in the foreign literature. In none of these cases has there been involvement of the testicle, and no one of them has been an infant. We are reporting this case because of the patient's age and the extraordinary complications encountered.

THE MECHANISM OF A SPRAINED ANKLE

BY ALEXANDER P. AITKEN, M.D.*

ALTHOUGH there is nothing more common than a sprained ankle, little can be found in the textbooks to explain what structures are involved and what actually takes place when an ankle is sprained. The structures which are said to be most commonly involved are the deltoid ligament, the anterior and lateral bundles of the talo-fibular ligament and the calcaneo-fibular ligament. Our experience leads us to be-

lieve that it is only in the exceptional case that these structures are involved. We find, as others have already pointed out, that in the great majority of cases the point of maximum tenderness lies just medial to the external malleolus. This point corresponds to the distal tibio-fibular joint and lies directly over the anterior ligament of the external malleolus (anterior tibio-fibular ligament). We believe that this is the structure most commonly injured in sprains of the ankle. (Figs 1 & 2)

The manner in which this injury occurs is as

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follows. The ankle joint consists of a relatively square mortise made up by the tibia and fibula, and a relatively square tenon, the as-

FIGURE 1

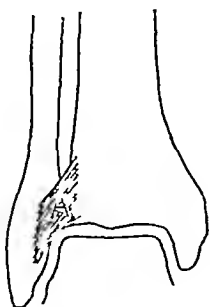


FIGURE 2

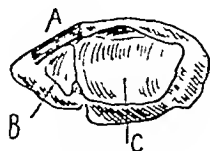
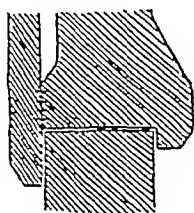


FIGURE 3



A ANTERIOR TIBIO-FIBULAR LIGAMENT
B FIBULA
C TIBIA

tragalus. When the foot is held at right angles, the wider anterior portion of the body of the astragalus fills the cavity of the mortise. With the foot in this position any sudden twisting of

the foot, especially inversion, will have a tendency to twist the astragalus in the snugly fitting mortise prying it apart (Fig 3). When one takes into consideration that the entire body weight is being exerted on the ankle at the time of the injury, one can appreciate the tremendous leverage thus brought to bear upon the mortise.

Now the mortise is not a complete bony structure. It has one decidedly weak point, namely at the tibio-fibular joint, and it is at this point that the mortise tends to give way. Tension is thus placed on those ligaments which bind the fibula to the tibia, the anterior and posterior ligaments of the external malleolus (anterior and posterior tibio-fibular ligaments). As the anterior portion of the mortise is in much closer contact with the wider anterior portion of the body of the astragalus, most of the tension is thus brought to bear on the anterior portion of the tibio-fibular joint. As a result of this tension we get tearing or stretching of the anterior tibio-fibular ligament which accounts for the pain and tenderness just medial to the external malleolus.

We have described this lesion as occurring with the foot being forced into inversion. However, it is perfectly possible for the same picture to appear, should the foot be forcibly everted. However a fracture of the internal malleolus is more common in this type of injury.

The above is of course not the complete picture seen in most sprains. There may be a general stretching of the other ligaments and tendons, which in the latter may amount to a tenosynovitis. There also occurs injury to the overlying soft parts with subcutaneous hemorrhage.

In our series of cases we have found the above picture in well over 80 per cent of the cases.

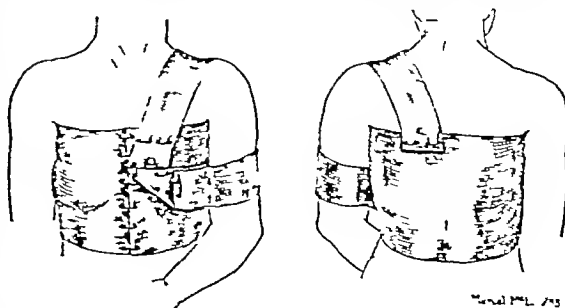
A COMFORTABLE BREAST SWATHE

BY ERNEST M. DALAND, M.D.*

SEVERAL years ago the late Dr. Frank Richardson suggested to the writer that the breast dressing described below be substituted for the double binder then in use. The inner swathe or binder had been used to hold the breast dressing in place postoperatively and the second binder had been passed around the arm as well as the chest. Patients had been complaining bitterly about the double binder and had often pleaded to have it removed or loosened.

The chest swathe is applied as usual but care is taken that the swathe used is not too wide and that it does not arch upward in the front or back above a line drawn between the apices of the axillae. This swathe is made of Canton flannel. A second swathe of the same type is then folded lengthwise three times, making its width one third that of the first. It is fastened to

the first swathe posteriorly by two pins, brought over the shoulder and pinned to the first swathe in front. This makes a comfortable shoulder



strap and serves to hold that part of the dressing over the pectoral region in place. The folded swathe is then brought down to the center of the chest swathe, anchored with one or

Daland, Ernest M.—Chief of Surgical Out Patient Department, Massachusetts General Hospital. For record and address of author see "This Week's Issue," page 871.

two pins, turned on itself, carried around the arm, back to itself where it is anchored with another pin

Aside from holding the dressing in place, the purpose of any postoperative breast dressing is to make the patient comfortable. She is uncomfortable if she abducts the arm, but there is no reason why she should not move the forearm, for it does not give pain. Abduction also disturbs the healing of the skin flaps by making a dead space beneath them.

The dressing described acts as a sling for the upper arm and the arm is more comfortable than if a pillow is used to keep it from drop-

ping backward. It allows a slight amount of movement of the arm across the chest and it allows full motion of the forearm. It is used during the first four or five days after operation. When it is removed the patient is ready to start active but limited use of the arm. No passive manipulation is ever used. The patient is never urged to use the arm, nor is it suggested that she is in danger of not regaining full motion. However, the average patient is able to comb her hair by the time she is discharged from the hospital, whether she has had a simple or a radical operation.

THE HEEL SHIFTING OPERATION FOR FLAT FEET,— AND OTHERS

BY FREDERIC JAY COTTON, M D ‡

LONG, long ago an ingenious German named Gleich devised an operation

Years afterward, I chanced on his report and promptly adopted the method for a variety of purposes

The essence of the thing is a shifting of the back end of the os calcis to readjust the relations of the weight-bearing line of the leg and the much discussed "triangle of support" of the plantar foot surface*

About the same time it was my privilege to work with Dr. Robert Lovett on a bit of investigation and presently we evolved some basic facts and principles† that rather supplanted a lot of the previous work, mainly German

This changed a lot of ideas as to mechanical physiology of the foot, and cleared our heads very much

Nevertheless the old idea of sheer static weight bearing was sound, and the idea of importance of the relation of the weight-bearing line of the leg to the weight-sustaining triangle of the sole, held true

Also the ability to shift the rear point of this triangle, the heel, surgically, remained most important

Oddly enough Gleich's idea has never been largely utilized—to my knowledge

His operation rested on the possibility of shifting the rear end of the os calcis inward, after division of the "neck" of the bone with a Gigli wire saw

The saw seems unnecessary and less desirable than a clean cut with a thin osteotome which leaves surfaces less burned over and irregular

*The triangle is formed by the distal heads of the first and fifth metatarsals and the plantar bearing point of the os calcis. The weight bearing line is down the tibia to the middle of the astragalo tibial joint

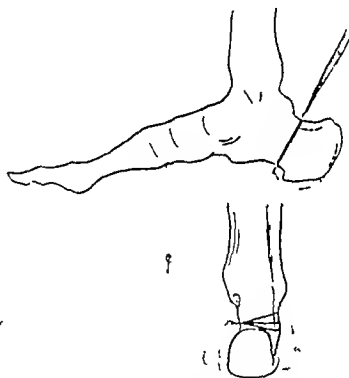
†Lovett R. W. and Cotton F. J. Some pathological practical points in the structure of the foot. Tr. Am. Orthop. A. 11 293 1898

‡Cotton Frederic Jay—For record and address of author see This Week's Issue page 371

enough to make entanglement or any desired impaction easy and effective

The approach may be anywhere (easily managed from the outer side) so as to cut down and forward

With the heel once free one may carry it inward or outward, downward, or down and forward



MOBILIZATION OF HEEL

Upper figure Shows the cut across the neck of the os calcis. The dotted line shows the heel shifted downward and somewhat forward.

Lower figure Shows the ankle from behind. The heavy lines show the cuts across the bone varying in direction (in this plane) according to the purpose of the operation.

The heel may be displaced along the line of these cuts to give the various corrections indicated by the various dotted lines.

According to what is desired the slant of the cut may be varied in two planes as the illustrations show. This makes any sort of correction easy, with maintenance of adequate bone contact.

One need not hesitate to do radical shifting of the heel, or to secure the position once gained by producing light impaction with a hammer on the thick weight-bearing pad of the heel.

Maintenance of position is secured with a plaster of Paris boot

Union, as always where the os calcis is concerned, is amazingly prompt.

Weight-bearing may be begun carefully, as early as a month after operation

Devised for palliation of the extreme flat feet so common in European peasants, the operation first proved itself here in the correction of valgus deformity in old consolidated os calcis fractures then in certain selected cases of flat foot and also in varied valgus and varus deformities,

notably in the correction of the rather common residual twist inward of the heel seen in club feet otherwise adequately corrected, whether congenital or of paralytic origin

The operation is very simple

Its adaptation to the case in hand demands, and rewards, a certain mechanical deftness

MEDICINAL WHISKY RULING ISSUED BY FEDERAL DRUG OFFICIALS

The Food and Drug Administration recently issued a statement intended to clarify the specific requirements of the Federal Food and Drugs Act as they apply to medicinal whisky. The announcement supplements but does not in any way conflict with the labeling regulations covering beverage whisky recently issued by the Federal Alcohol Control Administration. It shows that whisky sold for drug purposes is subject to requirements which do not apply to an article intended exclusively for beverage use.

The Food and Drug Administration emphasizes that the requirements it enforces in regard to medicinal whisky are not administrative rulings but are set forth in the Food and Drugs Act which requires that drugs listed in United States Pharmacopoeia shall conform to the definition in that authority. The definition for whisky in the U S Pharmacopoeia is more rigid than the definition for 'straight whisky' which the FACA issued February 6 1934 in that Pharmacopoeia whisky must be aged four years in charred wood containers and its alcoholic content must be not less than 47 per cent and not more than 53 per cent by volume of absolute alcohol. Medicinal whisky which does not conform to the pharmacopoeial standard must be labeled to differentiate it clearly from the official product. The Food and Drug Administration statement includes illustrations of labels which will be regarded as legal on such products.

The statement issued recently applies to medicinal whisky sold in the District of Columbia and to whisky for medicinal use shipped in interstate commerce throughout the United States.

The text of the ruling follows:

A drug sold within the jurisdiction of the Federal Food and Drugs Act as "Whisky" "Spiritus Frumenti" or "Sp Frum" must comply exactly with the definition for "Whisky" in the U S Pharmacopoeia and otherwise satisfy the provisions of that authority for "Whisky". It must be labeled with a statement of the quantity of alcohol in terms of the percentage by volume of absolute alcohol.

A drug varying from the Pharmacopoeial specifications for "Whisky" in strength, quality or purity (but not in the identity of its constituents or of the materials from which it is made) may be sold as

"Whisky not U.S.P." if the label carries a declaration of its own standard of strength, quality and purity. It may be (1) an article conforming to the definition in the U S Pharmacopoeia except with respect to time of aging percentage of alcohol and content of acids and esters, or (2) a mixture of (1) with grain alcohol or grain alcohol and water, or (3) a mixture of U.S.P. whisky with grain alcohol and water. It may not contain alcohol from non grain sources nor may it contain any substance not present in U.S.P. whisky. Such a drug may be labeled as in the following three examples assuming it to be of the indicated composition in each case:

Whisky
Not U.S.P.
Aged — years
Alcohol by Volume —%

Whisky
Not U.S.P.
—% straight whisky aged — years —%
neutral spirits from grain
Total Alcohol by Volume —%

Whisky
Not U.S.P.
—% U.S.P. Whisky —% neutral spirits
from grain
Total Alcohol by Volume —%

Diluted alcohol (from whatever source) with or without artificial flavor and color is not entitled to the name "Whisky" however qualified if sold as a drug but may be sold as a drug under any other name which is not false or misleading in any particular.

A pharmacist in the District of Columbia filling a prescription for "Whisky" "Spiritus Frumenti" or "Sp Frum" must fill it only with whisky conforming to the requirements of the U S Pharmacopoeia. If a physician prescribes "Whisky not U.S.P." and specifies the standard of strength, quality or purity desired, the prescription must be filled with a product conforming to such specifications.

This announcement shall not be construed as modifying or changing the regulations of the Federal Alcohol Control Administration relative to the labeling of distilled spirits but shall be considered as an addition thereto—*Bulletin, U S Department of Agriculture*

CASE RECORDS of the MASSACHUSETTS GENERAL HOSPITAL

ANTE MORTEM AND POST MORTEM RECORDS AS USED
IN WEEKLY CLINICAL PATHOLOGIC EXERCISES

EDITED BY RICHARD C. CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 20161

PRESENTATION OF CASE

An American engineer thirty-three years old entered complaining of vomiting, fainting, and bloody and tarry stools.

For the past ten years the patient had had occasional vague attacks of indigestion consisting principally of gas and a feeling of fullness in his abdomen. Relief was always obtained by the taking of soda or milk of magnesia and lying down for a few minutes. There was no real abdominal pain. These symptoms were not all related to meals and were not relieved by food. During the three months prior to entry this vague abdominal discomfort became more noticeable. Seventeen days before admission he noticed a dull aching pain high up in the epigastrium and in the left hypochondrium which after lasting for fifteen or twenty minutes seemed to "work through to his back", producing a dull pain at about the first lumbar segment in the midline. This pain came on several hours after meals, did not awaken him at night, and was not relieved by food or soda. Two weeks before admission he passed a moderate sized tarry stool. This was not associated with weakness or faintness. One week before admission he became nauseated one evening and vomited about a half a glassful of black material. He felt considerably relieved, but was somewhat weak and dizzy. He felt well the next morning. Four days before admission he had some epigastric pain and passed two tarry stools. On the night before admission he passed another tarry stool, had profuse sweating, became very weak and dizzy, and later vomited about a pint of black material, following which he fainted for a few minutes. He was brought to the Emergency Ward in an ambulance and shortly after arrival vomited half a kidney basinful of brick red blood.

His family and past histories are negative.

Physical examination showed a well nourished man lying on the shock table sweating profusely. The skin and mucous membranes were pale. The heart was not enlarged. The sounds were distant. No murmurs were heard. The blood pressure was 70/55. The lungs were clear. The abdomen was scaphoid. There was a lower right

rectus scar. There was slight tenderness in the epigastrium upon pressure. Rectal examination was not done. The knee jerks and ankle jerks were not obtained. Babinski was negative.

The temperature was 100°, the pulse 140. The respirations were 16.

The examination of the urine was negative. The blood showed a red cell count of 2,870,000, a hemoglobin of 50 per cent. The white cell count was 15,800, with 65 per cent polymorphonuclears. The stools showed a four plus guaiac.

The day following admission he was given a blood transfusion of 300 cubic centimeters and 1000 cubic centimeters of ten per cent glucose. The blood pressure remained about 120 systolic throughout that night. The following morning he vomited 500 cubic centimeters of bright red blood, following which his blood pressure dropped to 50 but gradually went back to 85. He was given 200 cubic centimeters of citrated blood and the same amount of ten per cent glucose. A surgical consultant advised frequent transfusions until the blood pressure was well above 100. He also advised that surgery should not be urged until the patient had picked up, which would probably be in about two months. Intravenous glucose and transfusions were continued. On the sixth day a note was made that it was three days since the last hemorrhage and that everything was going well. The pulse had gradually fallen to 80 and the blood pressure had averaged between 110 and 125 systolic. The patient had taken some cracked ice at half hour intervals. The next day he was put on milk and cream, one ounce every two hours. On the sixth day he was given a second stage diet with powders. That evening he passed a large hard black stool. The following day, after another hemorrhage, he was transferred to the Surgical Service and was operated upon.

The day following the operation the temperature was 104°, the pulse 140. He had signs of a slight collapse at the right base and was put in an oxygen tent. X-ray of the chest showed mottled areas of consolidation throughout, both lung fields. Physical examination showed coarse râles throughout the chest, with a large patch of bronchial breathing at the right base. He was transfused several times. He continued to cough up about six or seven ounces of foul sputum daily. The wound drained profusely. Postural drainage and neoarsphenamin were continued, but he rapidly went downhill. His temperature ranged between 101.5° and 103°. He died twenty-four days after operation.

X-RAY INTERPRETATION

DR. GEORGE W. HOLMES. We did not have a chance to examine his gastro intestinal tract. We have the films of the chest here. This is the first film, taken the day his temperature went up or the day after. It shows definite lesions in both lungs, large soft mottled areas

which to me do not suggest massive collapse I suppose it is possible that they were due to alveolar collapse, but it would be very unusual to have even that type scattered through both lungs. The appearance is much more suggestive of multiple infarcts or of bronchopneumonia. As yet I do not know how to distinguish between early infarct and bronchopneumonia.

In this film taken nine days later, the process in his lungs has apparently cleared up with the exception of an area on the right side near the angle of the scapula. There is a considerable difference in the exposure time of these two films and soft small areas might easily be blotted out, although I hardly think that is the case. The diaphragm is in the usual position in both sets of films, and the heart is not displaced.

In a film taken a few days later, on the twenty-fourth day,—a softer film, which would certainly show anything that the other showed—the left lung is practically free from any disease as far as we are able to demonstrate disease by x-ray. On the right side the patch that was previously noted is still present somewhat larger and more diffuse, and looks like a pneumonia, still it could be an infarct. These were all portable films.

In the film taken just before death we can see that the process is very extensive in both lungs, and of the same general character as before. The film taken of the abdomen shows an unusual amount of density on the right side, nothing else.

From the point of view of x-ray the problem here is to distinguish between multiple infarcts of the lung and pneumonia. We were unable to demonstrate an abscess cavity at any time. If it was a pneumonia it was probably a bronchopneumonia that cleared up, then something else happened. I can make no definite diagnosis.

FURTHER HISTORY

The operation was performed under ether and lasted an hour and twenty minutes. It consisted of ligation of the vessels of the lesser curvature, cauterization of the ulcer, and posterior gastro-enterostomy.

DIFFERENTIAL DIAGNOSIS

DR. DONALD S. KING. I do not think it necessary for me to discuss the part of the story which relates to the gastric ulcer. The operation proved that the patient had an ulcer and I shall leave to the surgeons the discussion as to the optimum time of operation on these cases with profuse hemorrhage. From the medical standpoint the principal problem is that of the pulmonary complication, and we have only a few lines at the end of the case record to throw light on this condition.

In the first place the operation was performed under intratracheal anesthesia. This adds interest to the case, because the surgeons and

anesthetists at the hospital have grown to feel that cases which have received intratracheal anesthesia have very rarely developed pulmonary complications.

Of particular interest in this case is the occurrence of foul sputum. The case record as given to me for study did not mention the occurrence of foul sputum. This fact was left out, I suppose, intentionally. I am interested in knowing if this patient had mouth sepsis, because there is reason to believe that in many cases with pyorrhea and extensive dental caries there is inhalation of this septic material and a resultant spirochetal pneumonia. Such pneumonia has been rare in this hospital, but Dr. Churchill has spoken of cases that he observed at the City Hospital. Personally, I have not observed a case of pure spirochetal pneumonia in this hospital. Was anything said in this patient's hospital record about the condition of his mouth?

DR. M. J. BACHULUS. Examination of his mouth at entry showed dirty carious teeth and retracted reddened gums.

DR. KING. He did have, then, mouth lesions from which material containing spirochetes could be inhaled, but if he did inhale this septic material from the mouth in spite of an intratracheal anesthesia this is an interesting phenomenon.

From a statistical standpoint, the fact that he was given ether anesthesia does not give me any great concern, especially if the ether is given carefully by the intratracheal method.

The day following operation the temperature was 101°, the pulse 140, findings which are not typical of an ordinary collapse, especially since the record notes signs of only slight collapse at the right base. With this temperature we would ordinarily expect a very severe bronchopneumonia of a character which often results fatally.

He was put in an oxygen tent, so that he must have been in a rather serious condition. He would certainly not have been put in the tent for only a slight collapse.

The x-ray, as Dr. Holmes has demonstrated, shows mottled dullness throughout both lung fields. Certainly this is not the picture of collapse.

He had coarse râles throughout both chests and a large patch of bronchial breathing at the right base. These signs might be due to pneumonia or collapse with the bronchus open, but from the general x-ray picture one would say pneumonia.

He coughed up six or seven ounces of frothy sputum daily. This is not characteristic of collapse pneumonia, or abscess. The fact that he had foul sputum later, however, makes one think definitely of abscess or spirochetal pneumonia.

I have no doubt that Dr. Allen would like to overlook the fact that the surgical wound drained

profusely and to put the responsibility for the patient's death on the medical condition I am accustomed to that, because I find that at autopsy the surgeon will always attach more importance to a small area of pneumonia than to a large area of peritonitis. Nevertheless in this case I must grant there was enough in the lungs to account for the fatal termination. The patient died twenty-four days after the operation, apparently after a long and stormy course. This is certainly not the story of collapse. It may be bronchopneumonia, but in view of the foul sputum it is not the ordinary bronchopneumonia. I assume that spirochetes were found in the sputum, otherwise he would not have been given neo arsphenamin.

DR TRACY B MALLORY None were found.

DR KING It is interesting if an abscess did really develop in spite of early neo arsphenamin treatment. Dr Lord and I have been going over the lung abscess cases which have been treated by neo-arsphenamin, and with the data now at hand we have not been able to find any evidence that such treatment has been of definite value. In this case, at any rate, it did not seem to help.

I had not seen the x-ray films until the present time, but before I had seen them I believed that we were dealing with either a lung condition brought about by septic emboli or a spirochetal pneumonia due to inhalation of septic material from the mouth. We have had, so far as my experience is concerned, very few post-operative pulmonary complications of this sort which were proved at autopsy to be due to embolic processes. I remember well one patient who died two days after operation who had an x-ray film similar to this one, though with less mottling. He died with all the symptoms of pneumonia and none of the characteristic symptoms of pulmonary emboli or infarct. The autopsy showed multiple septic emboli apparently arising from a phlebitis in the leg, so that if there were a definite source for septic emboli in this case, the whole picture might be explained on this basis. With the facts at hand, however, it seems to me more reasonable to call this a spirochetal pneumonia rather than an embolic pneumonia or a true lung abscess. Certainly no large lung abscess has been demonstrated, and the process was so diffuse throughout the lung that my diagnosis would be a spirochetal bronchopneumonia with possible abscess formation.

CLINICAL DISCUSSION

DR ARTHUR W ALLEN This patient was thirty-three years of age. He had had indigestion for a period of several years and acute stomach symptoms for nearly three weeks before he came in here. The commonest source of

profuse hemorrhage from the upper gastrointestinal tract in a patient of this age is duodenal ulcer. It outweighs all the other causes tremendously.

We have had in this hospital one hundred and thirty-nine cases of massive hemorrhage from duodenal ulcer in the past twenty years. Twenty of these have died of hemorrhage. I am sorry to say that I do not know how many cases of fatal hemorrhage we have had from other causes, but I believe the number will prove to be very much smaller than from duodenal ulcer hemorrhage. We have had one death that we know about from a polyp of the stomach. We have had one death from hemorrhage in a profuse gastritis. Dr Means called our attention at one of these meetings not long ago to one death from hemorrhage in carcinoma of the stomach. We have had one fatal hemorrhage from a gastrojejunal ulcer. Gastrojejunal ulcers are apt to bleed, but not in such amounts as this one did.

We assumed that this man had a posterior wall duodenal ulcer with an erosion of a vessel overlying the pancreas. We have found that in the deaths that occurred under fifty years of age the mortality was 44 per cent, over fifty years of age the mortality was 33 1/3 per cent. I do not believe that patients of this type can be successfully operated on in a depleted state with a mortality as low as 44 per cent. I think that they probably can be operated upon with a mortality lower than 33 1/3 per cent. So given a patient under fifty with a posterior wall duodenal ulcer with massive hemorrhage, I think we should give him the benefit of the doubt and allow him to recover under a medical régime. If he were in reasonably good condition and fifty, or a little over, or nearly fifty, I think we should be inclined to operate on him as soon as he recovered from shock, providing the medical men would permit it.

This man had an unusual lesion to produce a massive hemorrhage. He had a large ulcer of the upper posterior wall of the stomach which had eroded the main vessel along the lesser curvature. In retrospect possibly we might have suspected that the lesion was not a duodenal ulcer, because the course was not like that of a duodenal ulcer. At his age he should have stopped bleeding and not have bled again so profusely, so quickly. However, we waited a week or a little longer, and finally after this last profuse hemorrhage we felt that he was certainly doomed to bleed to death and that we had no right to wait longer, so as a last resort we did a big operation on a man who was in an extremely depleted condition.

We wanted to protect the patient as best we could and gave intratracheal anesthesia, a total of two ounces of ether during the operation. The other chart is here. It is interesting that he had no fall in blood pressure at all during the operation, which went along very smoothly. On

opening the abdomen we found an enormously dilated stomach. It was perfectly obvious that the duodenal region was free, there being no induration in that region such as we always get when we are dealing with a duodenal ulcer. The stomach revealed induration not far from the cardia in a very inaccessible area. It could not be approached with any other method than by opening the anterior wall of the stomach. This was done. A clot which was in reality a cast of this huge stomach—this cast probably weighed five pounds—was removed first and then the ulcer was exposed. It was about 3 centimeters in diameter, and on its anterior border was a thrombosed vessel. As soon as this was manipulated the thrombus came away with a tremendous gush of blood from the vessel. The vessel was two or three millimeters in diameter, so that having it exposed it was possible to ligate the vessel on the outside and stop the bleeding. It was not possible to cauterize the base of the ulcer successfully, although that was attempted. Having stopped the hemorrhage, the anterior wall of the stomach was closed and a posterior gastro-enterostomy done, because for some reason or other his pylorus though patent did not function properly. It is a well known fact that often in gastric ulcer the physiology of the pylorus is abnormal.

The wound became septic and the discharge had a very foul odor. As one came into this man's room one remembered cases of abscess of the lung one had seen. The odor was terrific. The pus in the abdominal wall smelt the same as that in the sputum and I believe proved bacteriologically to be the same. The abdominal wall sepsis responded to conservative measures and did not, we think, play any marked rôle in this man's exitus.

DR FREDERICK T LORD With respect to the diagnosis of the postoperative disturbance, the odor of the breath suggested pulmonary abscess. There was a different odor from the abdominal wound as compared with that from the breath. As far as the pulmonary condition is concerned the clinical aspects were consistent with a pulmonary abscess.

Dr King has spoken of our experience in reviewing cases of pulmonary abscess. This was an important experience with respect to the ineffectiveness of neoarsphenamin in an early treated patient. In addition to what Dr King has said, on two occasions we have noted the extension of a pulmonary abscess under treatment with neoarsphenamin. While we are not able to settle the question of the merits of neoarsphenamin, our experience here does not suggest that it has merit.

With respect to the problem of surgical interference in patients with bleeding peptic ulcer, resulting shock and profound anemia, this is my second recent experience. The first patient, discussed last July (Case 19302, *N E J of Med* Vol 209, No 4, July, 1933) died in consequence

of a postoperative subdiaphragmatic abscess and this patient succumbed to postoperative complications. Of the 138 cases in Allen's series with acute massive hemorrhage, only 20 died. Of these 20 fatal cases, 12 bled to death without operative interference and 8 succumbed after operation. Complete failure of operation may be ascribed to intervention when the patient was in a depleted state. It is difficult to watch patients hovering between life and death from hemorrhage without finally resorting to surgical measures of relief, but it must be appreciated that the majority of such patients recover spontaneously and that such a major operation as is proposed is of itself hazardous from superadded surgical shock and postoperative complications. Almost certain operative failure after depletion from rapidly repeated hemorrhage naturally raises the question of earlier intervention. The difficulty here is to determine in advance whether the patient will spontaneously recover or die. I am impressed with Allen's figures of the low mortality in patients under and the high mortality in those over fifty years of age, and I should like to ask on how many cases in these age groups the figures are based. Though the chance of spontaneous recovery is much less in the older age group, I do not believe it is possible to predict whether or not spontaneous recovery will take place in the individual case. The attempt at selection is likely to lead to surgical intervention in certain patients who would recover without it. In view of the danger of an operation of such magnitude during an episode of severe bleeding, early interference is I think more likely to raise than to lower the mortality.

DR ALLEN There were forty-eight of these cases over fifty years of age with sixteen deaths, and ninety-one cases under fifty with four deaths. Perhaps these statistics are not important, but the fact remains that under fifty the chance of recovery is so great that we should treat them expectantly. If we could decide before these patients become so depleted that they are likely to fall into the mortality group, and operate on them as soon as they have recovered from shock and before they have become starved, a great many of them ought to be operated upon successfully. As a matter of fact we have radically operated upon them in a subacute stage quite successfully so far, twenty consecutive cases without mortality. I am perfectly sure however that the operative mortality after two or three weeks of hemorrhage and starvation must be very high, and that is I think the differential point. We must either operate early before the patients are depleted having made up our minds that they will fall into the high mortality group or hold out until they have recovered from the main effects of hemorrhagic depletion.

DR HOLMES May I ask Dr Allen whether in case he had had information as to where the

ulcer was it would have made any difference?

DR ALLEN If we had known it was a gastric and not a duodenal ulcer we should have operated just as soon as he had recovered from shock. I have a feeling that probably his severe postoperative pulmonary and wound infection would not have occurred if we could have operated upon him before he was actually starved to a level of no resistance. He was depleted by starvation as well as by bleeding.

DR EDWARD D CHURCHILL In relation to pneumonia, there is a term that comes to my mind in a picture like this, the so-called "aspiration pneumonia." It may also follow immersion, particularly in sewage contaminated waters. I shall expect to find multiple foci of pneumonitis with small abscesses, probably in the right lung a fairly good-sized one. I think the infection probably came from his mouth. The patient was vomiting and had been on restricted fluids by mouth before the operation. I am not certain that a film taken before the operation might not have shown this pneumonia. I think that when patients are kept on nothing by mouth for days the utmost care should be taken in oral hygiene, particularly if they are to face a surgical operation eventually.

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CASE 20162

PRESENTATION OF CASE

An American clerk forty eight years old was admitted from a State prison for the repair of a ventral hernia.

Five years before entry he had an appendectomy, followed four months later by bulging of the lower end of the scar. Three years before entry he was told during a life insurance examination that he had bilateral inguinal hernia, although he had never noticed any swelling before.

His father died of heart failure at the age of seventy-four. His mother, who was seventy-four years old, was living, but in poor health. Two sisters were living and well. There was no history of tuberculosis or cancer.

He had been married for twenty-four years. His wife and four children were living and well. One child died following appendicitis. There had been one stillbirth.

He had been well most of his life. There was no history of scarlet fever, rheumatic fever, pneumonia or influenza. He was said to have had a traumatic pleurisy four years before admission, at which time two ribs were broken. Two years before entry he lost about twenty-five pounds but had gained forty-five pounds since that time. Recently he had lost about ten pounds.

Physical examination showed a healthy appearing, well nourished man. The upper teeth were false. There was some prorrhea. The abdomen was pendulous. There was marked protrusion in the right lower quadrant. Just to the right of the umbilicus was a scar at the distal end of which was a small easily reducible hernia. There was a small soft easily reducible right inguinal mass protruding down the inguinal canal and descending to two centimeters above the pubic spine.

The temperature was 98°, the pulse 80, the respiration 20.

Examination of the urine was negative. A Hinton test was negative. The non-protein nitrogen was 27. A preoperative white cell count was 12,300.

Three days after admission a ventral and a right direct inguinal hernia was repaired under gas and ether anesthesia. Two days after operation the patient developed what was called collapse at the right base. One week after operation his temperature was 101°. The signs in the right chest were still present and appeared more marked. There was dullness with diminished tubular breath sounds and voice sounds. A chest film on the sixteenth day showed in the right base a small triangular shadow of increased density with its apex directed toward the heart. There was slight displacement of the heart and mediastinum to the right. The supracardiac shadow was also increased to the right. His temperature remained elevated, ranging from 100° to 102°. He began to complain of sharp pains in the right chest anteriorly on deep inspiration, and also

produced a fair amount of sputum. On the twenty-seventh day a note was made that the chest pain had disappeared. His temperature still fluctuated up to 102°. He sweat profusely and brought up large amounts of purulent sputum. There was questionable early grooving of the nails.

X-ray examination of the chest at this time in the lateral view showed the dullness to lie in the midportion of the chest. It appeared to involve the anterior portion of the lower lobe and a portion of the middle lobe. The septum between the middle and upper lobes appeared to be displaced downward. No fluid levels were demonstrated.

Examination of the sputum showed Gram-positive and negative organisms and a rare spirochete. The sputum was thick, yellowish and definitely purulent. The amount varied between one and two ounces.

On the thirty-third day a diagnostic chest tap was performed with the removal of 50 cubic centimeters of greenish cloudy fluid with a specific gravity of 1.030. The cell count showed 2000 white blood cells and 200 red blood cells. A culture showed pneumococci (?). No bile solubility test was done. Two days later a trocar thoracotomy was performed with removal of similar fluid. Culture at this time showed non-hemolytic anaerobic streptococci. His temperature ranged in the neighborhood of 103°. He did poorly.

On the forty-eighth day incision and drainage of a chest wall abscess was performed. Thick foul pus was found overlying the rib in the posterior axillary line. An anterior extension of the incision was then made and a large phlegmon of the chest wall lying deep to the muscles was drained. There was no evidence of perforation of the pleura. The wound of the trocar thoracotomy was then explored and found to be undetermined, although by making a lateral incision better drainage was obtained there.

A white blood cell count at this time showed 42,000 cells. The red blood cell count was 5,100,000, with a hemoglobin of 70 per cent. He continued to do poorly. During the next month he received four transfusions. In the early part of the third month he developed edema of his legs. The serum proteins however were 6.7 per cent. The non-protein nitrogen was 37, the chlorides 575, and the carbon dioxide combining power 50.1 volumes per cent. His temperature continued to swing between 101° and 102°. On the ninety-second day lipiodol was injected into the apparent empyema cavity. A chest film showed partial collapse of the upper and middle lobes and complete collapse of the lower lobe. After the lipiodol injection a large cavity was visible just above the diaphragm extending to the right border of the heart from the axillary border and showing a definite fluid level. He continued to receive transfusions, but remained feb-

ulcer was it would have made any difference?

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In the lateral view the process seems to be in the middle lobe. We can have collapse of the middle lobe without much displacement, but the appearance here is more like consolidation. You must remember that we attempt always to take the films at full inspiration, and with pneumonia on one side the diaphragm is always going to be higher on the side where the process is, because that lung does not fill, so that elevation of the diaphragm does not necessarily mean collapse. If this film had been taken at expiration there would not be that difference.

This film I presume was taken at the time the trocar thoracotomy was done. You can see the position of the partially collapsed lung and the fluid along the axillary border. A little later the border of the collapsed lung is better seen. The area of consolidation is still present. There is an area of rarefaction along the axillary border. The extreme base is quite dull, and there is mottled dullness extending upward into the partially collapsed lung.

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DR. DONALD S. KING: I only wish to say that abscess is the unusual type of postoperative complication. The percentage is low.

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fections of the hand. They are particularly fatal and unyielding when the lung and chest wall are invaded.

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DR. MALLORY: The autopsy on this man presented a surprise. There was of course an empyema and a small abscess cavity which drained into it, but I do not believe that was the cause of his death. He died of a diffuse tuberculous pneumonia. In the four months he was in the hospital, so far as I can make out from the record, no examination was made for acid-fast bacilli. The process was a very atypical one and was not recognized in gross at the time of autopsy, but, when the slides came through, the liver was found to be peppered with miliary tubercles, and acid-fast stains in the lung show plenty of the organisms.

In connection with his edema, undoubtedly the low serum albumin had a great deal to do with it, but he did have a well-marked nephritis, a glomerulonephritis in spite of the lack of rise in the non-protein nitrogen.

DR. JONES: Did he have any amyloid deposits?

DR. MALLORY: No.

DR. CHURCHILL: Were the lungs studded with miliary tubercles?

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The New England Journal of Medicine

SUCCESSOR TO
THE BOSTON MEDICAL AND SURGICAL JOURNAL
Established in 1828

Published by THE MASSACHUSETTS MEDICAL SOCIETY
under the jurisdiction of the

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SUBSCRIPTION TERMS \$4.00 per year in advance postage paid
for the United States Canada \$7.00 per year \$8.50 per year
for all foreign countries belonging to the Postal Union.

Material for early publication should be received not later
than noon on Saturday. Orders for reprints must be sent to
the Journal office 8 The Fenway.

The Journal does not hold itself responsible for statements
made by any contributor.

Communications should be addressed to The New England
Journal of Medicine, 8 The Fenway Boston, Mass.

A CHALLENGE TO THE MEDICAL PROFESSION

DURING recent years much attention has been given to the possibilities of the practice of preventive medicine in the office of the family physician. Opinion both within and without the medical profession has been unanimous in the belief that this should be developed as extensively as possible differences of opinion arising only as to the degree to which privately and publicly supported clinics should supplement this service. Timely in this connection is the letter recently sent by the Department of Public Health to all physicians in the State, emphasizing the opportunities that are theirs for the further use of diphtheria immunization in their private practice. Particularly significant in this letter is the statement that were immunization made a routine part of the care of the infant "there would be little need for the continuance of public clinics"

This statement may well be accepted as a direct challenge to the medical profession. Statistics of the public immunization clinics show that the majority of the children thus treated are already of school age. Were diphtheria of concern only to the school child, this might be sound practice. When it is remembered, however that two-thirds of the diphtheria deaths occur in children of preschool age it is readily apparent that the bulk of the publicly supported immunization work is merely to compensate for the omissions of private practice. The family physician has had five years during which he might have immunized the child, and yet in too many instances he has not availed himself of this opportunity. No health department is anxious to carry on immunization work, but, to protect the children of the community, must provide for this if so high a proportion of children are not reached by the family physicians. The extent of the clinic patronage is largely, therefore, a problem which rests in the hands of the medical profession.

Likewise of significance is the tabulation that accompanied the letter showing the prevalence of diphtheria in the larger communities. The city of Lowell, and more particularly the board of health and the physicians, can take no pride in its unenviable distinction of having the highest diphtheria rate in the state. When it is remembered that this is but a repetition of the same unenviable record in 1932 when Lowell was in this respect supreme in New England and a close contender for these questionable laurels on a nation-wide basis, it is evident that it behooves the authorities to do more than condone the situation. This problem may well merit the best attention of the Lowell medical profession. It is to be hoped also that Lowell's chief rivals, New Bedford, Medford, and Somerville, will similarly accept the challenge which these figures convey. In Weymouth it was met too late in the year to affect the figures, but was met by such cooperation between the physicians and the school as to leave no question as to the result. It may well behoove the other communities to do likewise, remembering always, however, that this is but a poor substitute for immunization carried on by the family physician as a part of the routine care of the first year of life.

IODINE AS AN ANTISEPTIC

DURING the past five or ten years, so many claims have been made by the manufacturers of antiseptic solutions that the physician is at a loss to know what to use in his own practice and what is best to advise for use in the homes of his patients. The relative value of such solutions must be based, primarily, on their ability

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partment budget curtailments should be well planned and wisely executed

Having no official information about what is contemplated for the Health Department, we can only hope that those in authority are giving to the Report of the Survey Committee the serious attention which it merits

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors

GREENOUGH, ROBERT B A B, M.D Harvard University Medical School 1896 F.A.C.S Consulting Surgeon, Massachusetts General Hospital and Collis P Huntington Memorial Hospital, Boston, Massachusetts Address 8 Marlboro Street, Boston, Massachusetts Associated with him is

TAYLOR, GRANTLEY W A B, M.D Harvard University Medical School 1922 F.A.C.S Assistant Surgeon to Out-Patients, Massachusetts General Hospital. Surgeon to Out-Patients, Collis P Huntington Memorial Hospital, Boston. Assistant Surgeon, Pondville Hospital, Norfolk. Address 264 Beacon Street, Boston, Massachusetts Their subject is "Cancer of the Breast End-Results Massachusetts General Hospital 1921, 1922, 1923" Page 831

SIMMONS, CHANNING C M.D Harvard University Medical School 1899 F.A.C.S Visiting Surgeon, Massachusetts General Hospital Acting Surgeon-in-Chief, Collis P Huntington Memorial Hospital Address 205 Beacon Street, Boston, Massachusetts Associated with him is

TAYLOR GRANTLEY W His record appears above as a co-author with Dr Greenough And WALLACE, RICHARD H A.B, M.D Harvard University Medical School 1927 Assistant in Surgery, Massachusetts General Hospital, Harvard Medical School, and Pondville Hospital Their subject is "Cancer of the Breast End-Results Massachusetts General Hospital 1924, 1925, 1926" Page 836

BRACKETT, EDWARD S A.B, M.D Yale University School of Medicine 1902 F.A.C.S Chief of Staff, Providence Lying-in Hospital. Chief of Staff, Gynecology Department, Rhode Island Hospital Consultant in Obstetrics, Pawtucket Memorial Hospital Consultant in Gynecology, Miriam Hospital and South County Hospital His subject is "Observations on the Problem of Maternal Mortality" Page 845 Address 167 Angell Street, Providence, Rhode Island

BRACKENBURY, SIR HENRY B M.D, M.R.C.S, L.R.C.P (Lond), Hon LL.D (Wales), Chairman of Council British Medical Association, Chairman of Council Institute of Medical Psychology, London, Vice-President of the Central Association for Mental Welfare, London Past President of the Association of Education Com-

mittees of England and Wales, Ex-Mayor and Freeman of the Borough of Hornsey and Freeman of the City of London His subject is "Health Insurance in England" Page 851 Address 30 W Heath Drive, Solders Green, London N W 11, England.

HUDSON, HENRY W JR. M.D Harvard University Medical School 1925 F.A.C.S Assistant Surgeon, Boston Children's Hospital Assistant in Surgery, Harvard Medical School Surgeon, New England Home for Little Wanderers His subject is "Snapping Thumb in Childhood Report of Eight Cases" Page 854 Address 66 Commonwealth Avenue, Boston, Massachusetts

GOLDEN, J L M.D Tufts College Medical School 1928 Assistant Surgeon, Malden Hospital, Malden Junior Surgeon, Lawrence Memorial Hospital, Medford Address 86 Forest Street, Medford, Massachusetts Associated with him is

HAMILTON, H H M.D Harvard University Medical School 1930 Resident Surgeon, Malden Hospital, Malden, Massachusetts Address Malden Hospital, Malden, Massachusetts Their subject is "Strangulated Inguinal Hernia, with Unusual Complications, in an Infant of Five Weeks" Page 857

AITKEN, ALEXANDER P M.D Tufts College Medical School 1928 Instructor of Surgery, Boston University Medical School. Assistant in Surgery, Boston City Hospital Junior Surgeon, Chelsea Memorial Hospital His subject is "The Mechanism of a Sprained Ankle" Page 858 Address 520 Commonwealth Avenue, Boston, Massachusetts

DALAND, ERNEST M A.B, M.D Harvard University Medical School 1918 F.A.C.S Chief of Visiting Staff, Pondville Hospital Chief of Surgical Out-Patient Department, Massachusetts General Hospital Instructor in Surgery, Harvard Medical School His subject is "A Comfortable Breast Swathe" Page 859 Address 483 Beacon Street, Boston, Massachusetts

COTTON, FREDERIC JAY See page 817, issue of April 12, for record of author His subject is "The Heel Shifting Operation for Flat Feet, and Others" Page 860

MISCELLANY

RECOMMENDATIONS OF THE COMMITTEE APPOINTED BY THE MAYOR OF BOSTON TO SURVEY THE HEALTH DEPARTMENT—MARCH 24 1934*

The various reductions in the budget items which we have indicated can only be secured by a reorganization of the Health Department, with consolidation of divisions and curtailment of certain activities In order to secure a more effective, closely

From a copy sent by His Honor the Mayor to the Boston Health League.

knit, well coordinated organization, we wish to make the following recommendations

ADMINISTRATION

We Recommend

1 That an official Public Health Council of five persons familiar with public health functions and public health administrative methods be selected by the Mayor. These persons should serve without compensation for a term of five years, with overlapping terms of office. They should hold monthly meetings and should advise the Health Commissioner on the policies of the Department, the appointment of personnel, and should pass on the annual budget.

We Recommend

2 That the Health Department should be reorganized into six major divisions, as follows

- A Administration, including Accounts, Vital Statistics and Health Education
- B Communicable Disease
- C Child Hygiene
- D Sanitation
- E Public Health Nursing
- F Laboratories

The Commissioner should be administrative officer for all the departments and responsible to the Mayor for the effectiveness of his work. He should have direct charge of the *Division of Administration*. There should be but one Deputy Commissioner, all other titles of Deputy Commissioner should be abolished. The Deputy Commissioner may well have direct responsibility for administration of the Health Centers and also the *Division of Child Hygiene*.

There should be one director for each of the major divisions that we have listed above. Each director should be responsible to the Commissioner for the activities of his division. Each divisional director should be thoroughly qualified to carry out the functions assigned to him and should devote his *full time* to the work of the Health Department.

MEDICAL DIVISION

We Recommend

3 That the term "Medical Division" be changed and the division be called the "Division of Communicable Disease Control."

The present functions and activities of the *Division of Tuberculosis* should be merged with this division.

One-half the cost of the medical inspectors that are assigned to the Health Centers should be charged to this division.

We Recommend

4 That the Detention Hospital be closed. It is an unnecessary expense and serves no practical purpose. All necessary hospitalization of contagious disease should be assigned to the contagious disease wards of the Boston City Hospital.

CHILD HYGIENE

We Recommend

5 That the Health Centers be strengthened and

supported, for they represent real health protection and promotion to the citizens of Boston. These eight Health Centers are the very life of the Health Department and are Boston's greatest contribution to public health administration in the United States.

SANITATION

We Recommend

6 That all functions relating to sanitation should be fused in a single *Division of Sanitation*. To this division should be assigned all activities relating to food inspection, abattoir service, dairy inspection service, milk inspection service and general sanitation.

We Recommend

7 That the dairy inspection service be transferred to the State. The new State law has already made provision for this function. The members of this division may be transferred directly to the State Milk Regulation Board as soon as funds are provided in the supplementary budget.

We Recommend

8 That a marked curtailment of activities and a reduction in personnel of the Division of Sanitation be made. Most of the activities of this department bear no relationship whatever to protection of the health of the city, are a relic of the past, and are not public health functions.

We Recommend

9 That the Convenience Station service be transferred to some other division of city government. This service is not a function of the Department of Public Health and should not be allocated to its budget.

PUBLIC HEALTH NURSING

The Public Health Nursing Division has a larger personnel and budget than any other division. Nevertheless, the existing staff is not sufficient to carry out the usual volume of public health nursing service for a population of 800,000. This is indicated in the following comparison:

Staff necessary according to the usual volume of public health nursing service for 800,000 people	1933 staff of public health nurses employed by the City Health Department in Boston
1 Director and 1 Assistant	1 Director, no Assistant
13 Supervisors	11 Supervisors
131 Staff Nurses	117 Staff Nurses
4 Nutrition Workers	2 Nutrition Workers (2 Assistants)
2 Mental Hygiene Workers	No Mental Hygiene Workers
Clerical—1 clerk for 10-12 nurses	2 Clerks

Despite the fact that Boston does not have adequate public health nursing personnel, we can see no alternative under the existing emergency than to cut the personnel.

We Recommend

- 10 A reduction in the nursing personnel of
2 Supervisors
1 Nutrition Worker
2 Assistant Nutritionists
8 Nurses attached to the Health Centers
7 Field Nurses

The nurses removed from the Health Centers need not necessarily be the persons dismissed. It would seem advisable to reduce the staff first by those persons for whom new positions were created in 1933, secondly at the discretion of the director remove those persons who give least adequate service and are the least satisfactory. This would hold good in relation to the staff and the supervisors. Another consideration would be naturally those nurses who had other means of support.

LABORATORY**We Recommend**

- 11 That the salaries of all personnel engaged in laboratory work or related activities be allocated to the Division of Laboratories

When dairy inspection service is transferred to the State, it may be necessary for the laboratory to do more intensive milk analysis work so that a slight increase in the laboratory budget may be necessary.

HOSPITALIZATION OF TUBERCULOSIS**We Recommend**

- 12 That no substantial reduction be made in the item for hospitalization of cases of tuberculosis. The present waiting list for hospitalization shows the need for these funds. More intensive clinic work will probably result in a reduction of this item in the very near future.

Committee

WILSON G. SMILLIE, M.D.
PROFESSOR CLAIR E. TURNER,
SOPHIE C. NELSON, R.N.

DR. GEORGE W. HAWLEY'S FRACTURE TABLE

The man who twenty years ago invented the world's first orthopedic and fracture table, and whose work has since won him renown throughout the civilized world has now made an even greater contribution to his fellow man—and he has done it while bedridden at Glockner Sanatorium in Colorado Springs, Colorado.

He is Dr. George W. Hawley of Bridgeport, Conn., who has been decorated by foreign countries and is regarded as one of the world's authorities on fractures. He has been a member of the fracture committee of the American College of Surgeons ever since it was created. During the World War he was in charge of America's only bone and joint hospital in France.

Three years ago tuberculosis undermined Dr. Hawley's health and he was sent to Glockner Sanatorium, which is at the base of Pike's Peak. Unable to carry on his practice he converted his hospital room into a makeshift laboratory and from his bed directed experiments. Engineers traveled across the continent to confer with him in bringing out a new fracture table that combines the x-ray and fluoroscope with it for the first time in medical history.

The table is not yet in general use but it is installed in some of the leading hospitals in India, Belgium, Philadelphia, New York City, Atlanta, Ga., Sharon, Pa., Washington, D. C., Milwaukee, Wis., Toledo, O., Waukesha, Wis., Elmira, N. Y., Ogden, Utah, and Glockner hospital in Colorado Springs where the original was perfected.

Guesswork in setting fractured bones has been entirely eliminated through the use of the new table which permits the surgeon to watch and guide the fracture ends during reduction, through the fluoroscope. He is not compelled to manipulate and attempt reduction blindly and then take radiographs to learn whether the operation is complete or a failure. In the past, treatment of fractures required the help of many hands, extravagance of costly dressings and in instances the job had to be done over.

Formerly the patient was subjected to much pain and handling by being moved from the fracture table to the x-ray table. With the new combination table and x-ray the surgeon may take radiographs of any type of fracture at any time during the operation regardless of the position of the patient. This is possible because of the design of the apparatus and the mobile shock-proof x-ray unit. There is no danger to the patient, nor the surgeon from possible shock. The table is of steel with top sections of plywood covered with bakelite, permitting free passage of the x-ray and eliminating graining of radiographs.

Doctors say that the new table not only revolutionizes and simplifies handling of fracture cases but is a more humane and more economical apparatus and procedure.

Dr. Hawley's table that was brought out twenty years ago is now in the Smithsonian Institution, Washington, D. C.

While Dr. Hawley has been at work on the new table he has been cured seemingly a reward for his effort. He has recently been released from the Colorado Springs Hospital.

CORRESPONDENCE

DIPHTHERIA PREVENTION

The Commonwealth of Massachusetts
Department of Public Health
State House, Boston

March 21, 1934

Dear Doctor

In 1933 there were only 1,041 cases and 86 deaths from diphtheria as contrasted with 9,018 cases and 579 deaths in 1923. Great as may be our satisfaction at this striking reduction, much remains to be done in diphtheria prevention. The greatest opportunity for diphtheria immunization in the future rests in the hands of the family physician. Many physicians today regularly immunize all infants under their care. Were this done routinely by all physicians in the State, diphtheria would soon virtually disappear, and there would be little need for the continuance of public clinics.

May we bespeak your cooperation and interest in this work. The advisability of immunization should be called to the attention of all parents and active immunization with diphtheria toxoid should be recommended as a routine during the latter half of the first year of life. The Department of Public Health urges all boards of health to send a card similar to the enclosed, on the basis of birth records. If your community is not already doing so, we would suggest that you take this up with your board of health. There is enclosed also a table showing the incidence of diphtheria in the larger cities and towns during the past few years. Only

by constant effort can the reduction already achieved be maintained.

Very truly yours,

HENRY D. CHADWICK, M.D.,
Commissioner of Public Health,
WILLIAM H. ROBESY, M.D.,
President, Massachusetts Medical
Society,
DWIGHT O'HARA, M.D.,
Chairman, Committee of Public
Health, Massachusetts Medi-
cal Society

A SAMPLE OF THE CARD

The Commonwealth of Massachusetts
Department of Public Health

Diphtheria Can Be Prevented

The ideal time to protect a child against diphtheria is between the ages of six months and one year. Our records show that your baby is now over six months old. We therefore urge you to take this matter up with your family physician at your earliest opportunity. Every case of diphtheria is unnecessary and could be avoided by immunization.

Board of Health of _____

and

Massachusetts Department of Public Health

I have immunized _____ against diphtheria.
Please bring this child back in six months for a
Schick test.

Date 1934 M D

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

DIPHTHERIA CASES REPORTED FROM CITIES AND TOWNS OVER 10,000 POPULATION*

How Does Your Community Stand?

City or Town	Population	1927	1928	1929	1930	1931	1932	1933	1933 Case Rate†
Massachusetts	4,318,130	4,750	4,052	4,255	3,322	2,381	1,811	1,041	24.1
Lowell	93,733	191	116	65	21	26	38	71	75.7
New Bedford	103,112	304	258	228	160	118	78	73	67.5
Medford	67,550	34	39	87	47	64	39	41	60.7
Weymouth	23,235	12	8	12	5	8	7	14	60.3
Somerville	107,067	110	143	124	179	119	64	63	58.8
Peabody	22,300	20	13	21	24	57‡	19	12	53.8
Cambridge	109,728	141	246	144	91	53	69	50	45.6
Fairhaven	11,029	16	9	13	15	11	11	5	45.3
Taunton	36,123	12	8	3	5	38	14	16	44.3
Athol	11,375	1	0	1	1	0	16	5	44.0
Salem	43,695	133	70	220	133	60	52	18	41.2
Danvers	13,705	11	4	20	18	4	5	5‡	36.5
Chelsea	44,890	31	18	55	56	42	44	16	35.6
Fall River	106,382	141	117	129	117	100	41	34	32.0
Quincy	79,730	54	20	17	7	10	26	25	31.5
Wakefield	16,773	5	8	29	10	2	2	5	29.8
Woburn	20,120	16	37	33	9	9	7	6	29.8
Revere	37,245	55	17	51	29	38	9	11	29.5

Everett	52 515	46	48	106	63	103	47	15	28 6
Lynn	101,829	136	172	195	191	106	57	28	27 5
Worcester	198 270	257	269	125	213	117	102	54	27.2
Attleboro	22,510	23	19	23	6	7	10	6	26 7
Boston	782,205	1 259	898	1,104	862	701	540	207	26 5
Needham	12 051	1	1	3	6	1	3	3	24.9
Haverhill	48,372	78	44	57	72	6	13	12	24.8
Brockton	62,796	30	59	25	23	48	11	15	23 9
Winthrop	17,295	11	8	7	1	4	3	4	23.1
Watertown	41 040	43	25	35	27	23	13	9	21 9
Arlington	43,335	10	15	18	23	8	19	9	20 8
Dedham	15,924	1	5	2	3	1	0	3	18 8
Newton	73 215	25	14	8	3	1	6	13	17 8
Malden	62 080	52	22	91	24	62	22	11	17 7
West Springfield	17 560	39	42	10	6	0	1	3	17.1
Plymouth	12 958	7	10	3	11	9	3	2	15 4
Wellesley	12 985	1	3	2	1	0	10	2	15 4
North Adams	20 915	9	8	1	2	1	0	3	14 3
Gloucester	24,735	21	24	14	2	3	1	3	12 1
Milton	18 750	6	5	0	4	3	3	2	10 7
North Attleboro	10 455	45	22	0	0	0	0	1	9 6
Reading	10,463	4	0	2	17	1	1	1	9 6
Lexington	10 555	5	0	1	7	3	10	1	9 5
Waltham	42,171	87	38	13	4	4	15	4	9 5
Swampscott	11 249	13	29	11	6	5	5	1	8 9
Adams	12 161	37	8	10	17	11	6	1	8 2
Northampton	24 530	14	13	12	45]	4	2	25	8.2
Amesbury	12 330	0	2	15	10	11	1	1	8 1
Belmont	25 955	23	21	11	6	11	6	2	7 7
Newburyport	14 735	0	2	57	84	13	14	1	6 8
Chicopee	45 255	51	31	40	21	20	8	3	6 6
Marlboro	15 168	61	17	6	2	4	13	1	6 6
Saugus	15 970	10	36	7	6	6	1	1	6 3
Braintree	17 340	3	9	7	5	4	2	1	5 8
Springfield	154,970	256	348	268	133	39	17	9	5 8
Holvoke	54,070	45	62	36	5	3	2	3	5 5
Fitchburg	38 798	36	27	64	16	10	11	2	5 2
Gardner	19 830	1	4	2	3	1	0	1	5 0
Pittsfield	51 486	16	31	54	8	2	2	2	3 9
Beverly	26 645	20	5	18	44	7	3	1	3 8
Lawrence	79 614	35	41	31	16	13	3	3	3 8
Brookline	50 613	8	4	5	16	9	7	1	2 0
Clinton	11 930	2	1	1	0	1	1	0	0 0
Easthampton	11 152	2	1	10	2	0	0	0	0 0
Framingham	22 935	7	1	6	3	0	2	0	0 0
Greenfield	15 660	14	28	9	5	4	2	0	0 0
Leominster	21 612	43	0	2	3	0	13	0	0 0
Melrose	25 120	5	15	10	10	8	14	0	0 0
Methuen	21 365	8	8	4	4	2	2	0	0 0
Milford	14 718	2	13	10	1	1	3	0	0 0
Natick	14 047	20	6	2	3	2	0	0	0 0
Norwood	15 625	3	2	3	5	2	2	0	0 0
Southbridge	13 471	14	13	9	2	0	5	0	0 0
Stoneham	10 690	2	1	14	10	2	1	0	0 0
Webster	12 735	4	1	13	1	0	2	0	0 0
Westfield	20 054	80	23	10	7	2	0	0	0 0
Winchester	13 465	2	5	6	7	18	5	0	0 0

*Estimated as of July 1, 1963.

†Case rate per 100,000 population.

‡Included 20 cases which occurred in a short outbreak in a single school.

§All cases in State Hospital.

||Included 39 cases at State Hospital.

¶One case in State Hospital.

ARTICLES ACCEPTED BY THE AMERICAN MEDICAL ASSOCIATION COUNCIL ON PHARMACY AND CHEMISTRY

535 North Dearborn Street, Chicago, Ill.,
March 31, 1934*Managing Editor,**The New England Journal of Medicine,*

In addition to the articles enumerated in our letter of March 3, the following have been accepted

Don Baxter Intravenous Products Corporation

Sterile 2½% Dextrose in Physiological Sodium Chloride Solution in Vacoliter Container

Sterile 5% Dextrose in Physiological Sodium Chloride Solution in Vacoliter Container

Sterile 7½% Dextrose in Physiological Sodium Chloride Solution in Vacoliter Container

Sterile 10% Dextrose in Physiological Sodium Chloride Solution in Vacoliter Container

Eli Lilly & Co

Solution Liver Extract Concentrated—Lilly

Ampoules Solution Liver Extract Concentrated—Lilly, 10 cc

G D Searle & Co

Tablets Procalne Borate Without Epinephrine

Sharp & Dohme, Inc

Antipneumococcic Serum, Types I and II Combined—Mulford

Antipneumococcic Serum, Concentrated (Pneumococcus Antibody Globulin, Types I and II)—Mulford

Diphtheria Toxoid, Alum Precipitated (Refined)

Live Oak Pollen Extract—Mulford, Red Clover

Pollen Extract—Mulford, Sweet Clover

Pollen Extract—Mulford, Southern Rag

weed Pollen Extract—Mulford

Yours very truly,

PAUL NICHOLAS LEECH, *Secretary,*
Council on Pharmacy and Chemistry

RECENT DEATHS

PERRY—**MARTHA PERRY, M.D.**, died in New Bedford, March 29, 1934, at the age of ninety-three years. She graduated from Mt Holyoke, and the Woman's Medical College of Pennsylvania where she served as an interne.

Dr Perry joined the Massachusetts Medical Society in 1885 and retired in 1913.

During her thirty-five years of practice in Taunton, she served as trustee, clerk, and member of the Staff of the Morton Hospital.

Dr Perry was a member of the Congregational Church and was active in civic affairs.

Burial was at West Yarmouth.

SOLBY—**IRVING SOLBY, M.D.**, of 235 Chestnut Hill Avenue, Brighton, Massachusetts, died suddenly, March 26, 1934. He was a native of Northampton, Massachusetts, a graduate of Amherst College and from the Harvard University Medical School in 1907. He retired from practice several years ago and en-

gaged in business. He joined the Massachusetts Medical Society in 1908 under the name of Sobotky and retired in 1924. He is survived by his widow, Mrs. Wilhelmina Soiby, and his mother, Mrs. Rose Sobotky.

McGAURAN—**MICHAEL SHERIDAN McGAURAN, M.D.**, of Lawrence, Massachusetts, died March 25, 1934. He was born in 1847. He graduated in medicine from the Rush Medical College of Chicago in 1888. He joined the Massachusetts Medical Society in 1891 and retired in 1927.

His interest in local organizations is shown by the following designated bequests in his will: St. Mary's Parochial School, Lawrence, \$1000 for prizes; Salvation Army, Lawrence, \$200; Working Boys' Home, Newton, \$1000; Lawrence Orphan Asylum, \$1000.

OBITUARY

L MAUD CARVILL, M.D.

In the recent death of Dr. L. Maud Carvill the community has lost a skilled ophthalmologist and a noble woman. Herself the daughter of a physician, she carried on the old tradition which makes the practice of medicine a career of self-sacrifice.

She graduated from the Sargent Normal School of Physical Training in 1895, receiving her A.B. from Tufts College in 1899, and her M.D. from the same college in 1905. She rose rapidly in her chosen specialty and became an assistant surgeon in ophthalmology at the Massachusetts Eye and Ear Infirmary and the Massachusetts General Hospital. From this position she retired a year ago. She served also as Visiting Ophthalmologist to the New England Hospital for Women and Children for over twenty years, retiring in 1929 to become a consultant.

She belonged to such general organizations as the New England Women's Medical Society, the Massachusetts Medical Society, and the American Medical Association. Of the societies demanding special training and achievement, she held membership in the New England Ophthalmological Society, the American College of Surgeons, the American Academy of Ophthalmology and Otolaryngology, and the American Ophthalmological Society. Of the last named society she was the only woman member, winning admission by a thesis on glaucoma. Through this paper she became nationally recognized as an authority on the subject. She is cited as one of the American authorities on two other subjects as well, interstitial keratitis and tuberculosis of the eye. At the International Congress of Ophthalmologists in Washington in 1922 she presented a paper entitled 'Bitemporal Contraction of the Visual Fields in Pregnancy' a contribution which has become a classic in the subject in Europe as well as America. Minor articles of hers are entitled 'A Contribution to the Study of Phlyctenular Keratitis' and 'Persistent Hyaloid Artery'. From

the material of an arduous practice she was constantly drawing conclusions and publishing them as scientific papers. As a result of these labors she has been estimated by a noted colleague as the most outstanding American woman of her generation in ophthalmological research.

Dr Carvill would have found herself appalled in the presence of this summary of her achievements for she suffered from a painful modesty which minimized the value of whatever she did. Reticence pervaded all the deeper ranges of her life in religion, in friendship, in family relations. She was a woman of more deeds than words. A touch of Puritan austerity demanded nothing short of the best, of herself and everyone else but it was meliorated by humor and a great kindness. Her total honesty in the face of facts made her essentially a scientist, but she was always as well a ministering physician. For six months she faced imminent death with entire fortitude, asking only to be spared long enough to complete her immediate tasks. This was granted her.

To a host of patients Dr Carvill leaves the fragrance of a grateful memory. For her associates in medicine, she lays on their personal loss the healing touch of a desire for better work and more exacting living.

NOTICES

A CLINIC ON PNEUMONIA

On Thursday afternoon April 26 at 3 30 P.M., in the amphitheater of the Peter Bent Brigham Hospital Dr Alfred Stengel, Professor of Medicine and Vice President in charge of Medical Affairs at the University of Pennsylvania. Physician in Chief *pro tempore* at the Peter Bent Brigham Hospital will give a clinic on pneumothorax in the treatment of pneumonia. Students of medicine and practicing physicians are invited to attend.

HENRY A. CHRISTIAN, M.D.

THE AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY

EXAMINATIONS FOR CERTIFICATES

The American Board of Dermatology and Syphilology will hold written examinations for candidates for a certificate on April 30 1934 in the following cities: New York City St. Louis Mo. Boston Mass. Cleveland Ohio San Francisco Calif. Philadelphia Pa. and Chicago Ill.

If a sufficient number of applicants register for the examination from other districts additional examinations will be held in other cities. This examination will be for applicants in both Group A and Group B.

The oral examination for both Group A and Group B will be held in Cleveland Ohio June 11 and 12 at the time of the American Medical Association meeting.

Further information may be obtained from the Secretary Dr C Gny Lane, 416 Marlboro Street, Boston, Mass.

PHYSICIANS' ART EXHIBIT

The Exhibit will open on Monday April 23, at the Boston Medical Library and continue through Saturday, May 5. The hours will be from 10 A.M. to 6 P.M. daily and 7 to 10 P.M. on Monday and Wednesday evenings.

Great interest is being shown in the exhibit and more pictures and models have been received than it will be possible to hang or display.

Through the kindness of an anonymous donor who is greatly interested in the advancement of art among the members of the medical profession, an award will be made for the best example of creative art. The award will be made by a committee of well known Boston artists who will also make selections for the exhibit to be held in October at the time of the meeting of the American College of Surgeons.

REPORT AND NOTICES OF MEETINGS

NEW ENGLAND HEART ASSOCIATION

The New England Heart Association held a meeting on Monday, March 26 in the Evans Auditorium of the Massachusetts Memorial Hospitals with Dr W D Reid presiding.

The program began with a talk by Dr George Levene on the roentgenologic diagnosis of coronary disease. The left ventricle is measured by a line extending from the auriculoventricular junction to the apex of the heart. A perpendicular to this line, erected at the point of greatest curve of the left heart border shows the thickness of the left ventricular myocardium which normally measures between eight and ten millimeters. This thickness is due to the amount and tone of the heart muscle.

The circumflex and anterior descending branches of the left coronary artery are the ones most frequently and extensively involved. Since these are distributed to that portion of the heart muscle which forms its left contour disease of these vessels readily manifests itself by changes in the appearance and activity of the left border.

The thickness of the left ventricular myocardium becomes diminished due to a loss of tone and frequently to degeneration of the muscle fibers. The heart appears to sag. Fluoroscopically the amplitude of pulsations is greatly diminished and when infarction is present, the amplitude of pulsations in the ventricle is weaker than those of the auricle. These findings have frequently enabled the speaker to diagnose coronary disease without any clinical knowledge of the patient. Demonstration of calc

fication of the coronary arteries is a diagnostic point of lesser importance, since it occurs infrequently and too late to be of practical clinical value

Dr Richard J Wagner presented a paper with lantern slides on carbohydrate metabolism in hypertension. This is part of a metabolic study now in progress at the Evans Memorial. Liver function was found disturbed in 80 per cent of the cases presented. Ten per cent of the cases showed a diabetic sugar tolerance curve. In 46 per cent of the hypertension cases the specific dynamic effect of carbohydrates was not present. In these cases the oxygen consumption did not rise after 100 Gm of sugar were given, but remained practically at the basal level, whereas in the remaining 44 per cent of all cases, the specific dynamic effect was present as in normal individuals, and a rise of the oxygen consumption after the sugar test meal from 300 to 800 calories was determined. The blood pressure declined in most of the cases of the group without specific dynamic effect from 20 to 80 mm systolic and 10 to 40 mm diastolic. In the group with normal response to the sugar stimulus only a small percentage did show a drop of the pressure. An increase of the urinary nitrogen output was observed in most of the cases without pressure response to the sugar meal. In the cases without pressure response the nitrogen output remained constant or was somewhat decreased. His work shows that the carbohydrate metabolism plays an important rôle in diseases which have hypertension as one symptom.

Dr Walter Mendenhall, professor of pharmacology of the Boston University Medical School, talked on certain drugs included in the curriculum but rarely used by the medical profession. These drugs included veratrum, salol, picrotoxin, pilocarpine, and curare. Veratrum has never been used to any great extent yet it is known to be a stimulant of the vagus center and can be given in doses that are not toxic. Salol, he believes, deserves to be tried in rheumatic fever and muscular pains as it contains salicylates in a form not irritating to the stomach. Pilocarpine a stimulant of the autonomic system, could be used more to moisten the mucous membranes and to remove fluids in cases of generalized edema. Picrotoxin until recently was seldom if ever used, but today it is used a great deal in the treatment of sodium amyl poisoning.

Dr Samuel H. Caldwell of the Department of Electrical Engineering at the Massachusetts Institute of Technology gave a demonstration lecture on electric oscillations and their significance in electrocardiography. He stated that the waves in an electrocardiogram are the summation of a number of waves. In other words, each wave can be broken down into a fundamental wave and a series of harmonics, or higher frequency waves related to the fundamental one. The analysis of a typical wave into its components was demonstrated. Such analy-

sis discloses the presence of frequencies far in excess of those that the string galvanometer, as used in clinical electrocardiography, is capable of recording. The need, therefore, for apparatus that is capable of recording faithfully these high frequencies is obvious.

Dr Caldwell concluded his talk by operating a cathode ray oscillograph to demonstrate visibly the shape and composition of certain electrical waves. It was suggested that the cathode ray oscillograph has important application in laboratories devoted to medical science.

The meeting was concluded by a demonstration of the "Mechanical Hearts" invented by Dr George Levene. These working models show the heart as it actually appears under the fluoroscope. The display included the normal heart, more common arrhythmias, valvular lesions, thyrotoxicosis, and coronary disease. The device should be of great value in teaching and demonstrating heart disease.

MASSACHUSETTS PSYCHIATRIC SOCIETY

The next meeting of the Massachusetts Psychiatric Society will be held on Friday evening, April 20, at the Boston Psychopathic Hospital at 8 P M.

The scientific program is to be as follows:

"The Effects of the Alteration of Posture on the Cerebrospinal Fluid Pressure" Dr Julius Loman

"Mental Disease in a Tuberculosis Sanitarium Population" Dr Clifford Moore

OSOAR J. RAEDER, M.D., *Secretary*

SUFFOLK DISTRICT MEDICAL SOCIETY

CENSORS' MEETING

The Censors of the Suffolk District Medical Society will meet for the examination of candidates at the Boston Medical Library, No. 8 The Fenway, Thursday, May 3, 1934, at 4 00 o'clock.

Candidates should make personal application to the Secretary, and present their medical diploma at least one week before the examination.

GEORGE P. REYNOLDS, M.D., *Secretary*

311 Beacon Street, Boston

HARVARD MEDICAL SOCIETY

POSTPONEMENT OF MEETING

The meeting of the Harvard Medical Society, scheduled for April 24, to be addressed by Dr James C. White, has been postponed to May 8. Notice with title will appear later.

JOHN HOMANS, M.D., *Secretary*

HOUSE OFFICERS' ASSOCIATION OF THE BOSTON CITY HOSPITAL

Monday, April 23, 1934

Subject Gynaecology

8 00 P M Presentation of Cases

8 15 P M "What Should Be the Attitude of the Beginning Practitioner of Medicine Toward the Practice of Obstetrics" Frederick L. Good, M.D.

8 35 P.M. 'Endometriosis' Frank A. Pemberton, MD

8 55 P.M. "The Modern Understanding of Human Infertility" Samuel R. Meaker, M.D.

9 15 P.M. "Gonorrhea in Women as a Clinical Entity" Alonzo K. Paine M.D.

This meeting will be held at the Thorndike Amphitheatre at the Boston City Hospital.

ROBERT T. PHILLIPS, M.D., *Secretary*

NEW ENGLAND PHYSICAL THERAPY SOCIETY

The regular meeting of the New England Physical Therapy Society will be held, through the courtesy of Dr. Herbert E. Herrin, Superintendent, in the Lecture Hall of the Psychiatric Clinic, Boston State Hospital, at 7 45 P.M., April 24, 1934.

The program is in charge of Dr. Rebekah Wright, Hydrotherapist, Massachusetts Department of Mental Diseases.

PROGRAM

Hydrotherapy Rebekah Wright, M.D., Boston.

The Superintendents of three Massachusetts State Hospitals will speak briefly on

The Continuous Bath. Ralph M. Chambers, M.D., Taunton.

The Wet Sheet Pack. Edward W. Whitney, M.D., Northampton.

Colonic Irrigation. Charles E. Thompson, M.D., Gardner.

After a demonstration in the hydrotherapy suite, the members and guests will be shown the other physical therapy facilities of the Clinic and will return to the Lecture Hall for discussion.

At 7 30 o'clock, prior to the program, there will be a meeting of the Council. Councilors are urged to arrive promptly as nominations for officers of the Society will be made at this meeting.

All members of the medical profession are cordially invited to be present and to participate in the discussion.

ARTHUR H. RING, M.D., *Secretary*

HAMPDEN DISTRICT MEDICAL SOCIETY

The Annual Meeting of the Society will be held at Hotel Kimball, Springfield on Tuesday, April 24, 1934, at 4 P.M.

Regular business and election of officers for the ensuing year.

Paper for the afternoon "The Neuroses as the General Practitioner Meets Them" Dr. Abraham Myerson of Boston.

Discussion by Fellows.

Dinner at 6 P.M. at expense of Society.

HERVEY L. SMITH, *Secretary and Treasurer*

Censors meet for examination of candidates for admission to the Society in the rooms of the Springfield Academy of Medicine 20 Maple Street, Springfield, on Thursday, May 3, at 4 P.M.

WORCESTER NORTH DISTRICT MEDICAL SOCIETY

The annual meeting of the Worcester North District Medical Society will be held at the Burbank Hospital, Fitchburg, Mass., on Wednesday April 25, at one o'clock P.M. Dr. Andrew R. MacAusland of Boston will deliver the annual oration on 'Recent Trends in the Treatment of Fractures'. Officers for the year will be elected. Dinner will be furnished by the hospital management.

FRANCIS M. McMURRAY, M.D., *Secretary*

PHI DELTA EPSILON FRATERNITY

A late notice appears on page 882.

SOCIETY MEETINGS, CONGRESSES AND CONFERENCES

April 20 and 27—Salmon Memorial Lectures. See page 443 Issue of February 22.

April 20—New England Roentgen Ray Society will meet at the Beth Israel Hospital at 3 15 P.M.

April 20—Massachusetts Psychiatric Society. See page 373.

April 23—Phi Delta Epsilon Fraternity. See page 882.

April 23—New England Heart Association will meet in the Assembly Room of the House of the Good Samaritan at 3 15 P.M.

April 23—House Officers Association of the Boston City Hospital. See page 373.

April 23—May 5—Physicians Art Exhibit at the Boston Medical Library 8 The Fenway. See page 377.

April 24—New England Physical Therapy Society. See notice elsewhere on this page.

April 26—A Clinic on Pneumonia. See page 377.

April 27—New England Society of Psychiatry will meet at the Boston State Hospital, Dorchester Center, Mass., at 1 P.M.

April 30—The American Board of Dermatology and Syphilology Examinations for Certificates. See page 377.

May 3—Faulkner Hospital Clinical Meeting will be held at 5 P.M.

May 14, 15, 16, and 17—Thirtieth Annual Meeting of the National Tuberculosis Association. For details apply to the National Tuberculosis Association, 450 Seventh Avenue, New York City.

May 25, 27, 28, and 29—The American Association on Mental Deficiency. Details may be obtained from the Secretary Dr. Groves B. Smith, Godfrey, Illinois.

June 12—American Heart Association will meet at 9 30 A.M. at the Cleveland Hotel, Cleveland, Ohio.

July 24-31—The IVth International Congress of Radiology will be held in Zurich under the presidency of Professor H. R. Schnitz. General Secretary Dr. H. E. Walther, Gloriastrasse 14 Zurich.

September 3-6—American Public Health Association at Pasadena, California. Dr. J. D. Dunshee, Chairman, Local Committee on Arrangements.

September 4, 5, 6—International Union Against Tuberculosis. For information address the National Tuberculosis Association, 450 Seventh Avenue, New York City.

DISTRICT MEDICAL SOCIETIES

ESSEX SOUTH DISTRICT MEDICAL SOCIETY

Thursday, May 3—Censors Meeting at Salem Hospital, 3 30 P.M.

Tuesday, May 8—Annual Meeting. Salem Country Club, Forrest Street, Peabody. Dinner at 7. Speaker to be announced. Subject to be announced.

RALPH E. STONE, M.D., *Secretary*

221 Cabot Street, Beverly, Mass.

FRANKLIN DISTRICT MEDICAL SOCIETY

The next meeting will be held on the second Tuesday of May at the Weldon Hotel, Greenfield, at 11 A.M.

CHARLES MOLINE, M.D., *Secretary*

Sunderland, Mass.

HAMPDEN DISTRICT MEDICAL SOCIETY

April 24—See notice elsewhere on this page.

May 3—Censors Meeting. See notice elsewhere on this page.

MIDDLESEX EAST DISTRICT MEDICAL SOCIETY

The next meeting will take place in May (2nd Wednesday) at Winchester

ALLAN R. CUNNINGHAM, M.D., Secretary
76 Church Street Winchester Mass

MIDDLESEX NORTH DISTRICT MEDICAL SOCIETY

Meeting will be held on April 25

T. A. STAMAS, M.D., Secretary
226 Central Street, Lowell Mass

MIDDLESEX SOUTH DISTRICT MEDICAL SOCIETY

May 3—Censors Meeting will be held at the Boston Medical Library, 8 Fenway, Boston.

NORFOLK DISTRICT MEDICAL SOCIETY

May—Annual Meeting Time place and program to be announced

FRANK S. CRUICKSHANK, M.D., Secretary
1695 Beacon Street, Brookline Mass

NORFOLK SOUTH DISTRICT MEDICAL SOCIETY

May 3—12 noon at Norfolk County Hospital Annual Meeting Election of Officers

N. R. PILLSBURY, M.D., Secretary
Norfolk County Hospital, South Braintree, Mass.

SUFFOLK DISTRICT MEDICAL SOCIETY

April 25—Annual Meeting at the Boston Medical Library Election of Officers Scientific Program Speaker Dr. Abraham Myerson Subject, 'Responsibility'

May 3—Censors Meeting See page 878

JAMES H. MEANS, M.D., Vice-President.
GEORGE P. REYNOLDS, M.D., Secretary
311 Beacon Street, Boston, Mass

WORCESTER DISTRICT MEDICAL SOCIETY

Meeting to be held on Wednesday as follows

May 9—Annual Meeting Time and place to be announced later

ERWIN C. MILLER, M.D., Secretary
27 Elm Street, Worcester, Mass

WORCESTER NORTH DISTRICT MEDICAL SOCIETY

April 25—See page 879

BOOK REVIEWS

Infections of the Hand A guide to the surgical treatment of acute and chronic suppurative process in the fingers hand, and forearm. By Allen B. Kanavel. Published by Lea & Febiger. Sixth edition. 552 Pages. Price \$6.00

In the sixth edition of this classic contribution on hand infections, Kanavel has not only revised the subject matter and added considerable new material, but has entirely rearranged its presentation. All expositions of methods of study, of anatomy, and of general principles have been assembled in Part I. Two new chapters on the function of the hand in relation to infections and on prophylactic treatment of injuries have been added. Parts II and III are clinical considerations of various phases of the subject and Part IV of complications, sequelae, and after treatment. To Part II on localized infections, such as felons, paronychia, carbuncles, minor space abscesses, has been added new material on indelible pencil injuries, milker's nodules, differential diagnosis of chancre, tularemia, sporotrichosis, coccidioides granuloma, blastomycosis, actinomycosis,

oriental boil and anthrax infections about metacarpophalangeal joints and human bites. All material on gangrenous infections has been assembled in one chapter, much of which is new. In Part IV, in addition to a thorough revision of former subject matter, is additional information on edema following infections and the use of splints after infections. In the fifth edition there were 196 illustrations. In the present edition there are 216. Some of the previous illustrations have been consolidated in single engravings, others have been omitted. Still others have been clarified and some new ones added from the hand of Mr. Tom Jones.

The physical make-up of the book is attractive with heavy boards and buckram, beautiful typography, and calendered paper which enhances the definition of the engravings.

Though other editions of this work, which has done more than any other contribution to place the subject on an intelligent and scientific basis, may be on the shelves of medical students, general practitioners, surgeons, and medical and hospital libraries, this sixth edition has been so thoroughly revised and augmented that it is necessary to discard the old and secure the new.

Manual of Urology By R. M. LeComte. Published by William Wood & Company. 1256 Pages. Price \$7.50

This manual of urology is well written, and contains the fundamentals of diseases of the genitourinary tract. It is short, concise, and well adapted for use by medical students, and nurses. Each disease is adequately described with its underlying pathology, symptomatology, differential diagnosis, course, prognosis and treatment. It is to be expected that in so brief a manual many fine points of diagnosis, treatment and pathology are necessarily omitted.

The author states that hypernephromata are the most common renal epithelial tumors in adults. It is the reviewer's opinion that renal cell adenocarcinoma are by far the most common renal neoplasms found in adults.

In classifying the causes of polyuria the author fails to mention infectious diseases as one of the common causes.

Diseases of the Nervous System By W. Russell Brain. Oxford Medical Publications, Oxford University Press, London. Humphrey Milford. 1933. 899 Pages.

There are many textbooks of neurology and some of the older ones are still of great value. Nothing has ever been written to compare with Oppenheim's two volumes, translated into English from the fifth edition in 1911. Even earlier is the splendid book by Gowers, giving his personal experiences as the result of many years practice in neurology. Both of these books are standard and all subsequent publications must necessarily be compared with them.

The book at hand for review is of a somewhat dif-

ferent character. It lacks the personal element found in the great neurological textbooks noted above. It does, however, give the neurologist the benefit of an excellent summary of the more recent additions to the subject. It is perhaps, a little technical for the average general practitioner, but, accurately written, one could hardly fail to obtain excellent information from a book of this type even though he had little experience with neurology. For the specialist the book does not add anything particularly new although it will serve as a convenient reference to the more recent literature, particularly on account of the extensive bibliography which is appended. Carefully produced, with a few well chosen illustrations this book is a distinct addition to the neurological field and both the author and the publisher deserve credit for embarking upon such an extensive adventure in these troublesome times.

Collected Papers of The Mayo Clinic and The Mayo Foundation Edited by Mrs Maud H Vellish Wilson and Richard M Hewitt. Volume XXIV 1932 Published by W B Saunders Company 1205 Pages. Price \$11.50

This the twenty-fourth consecutive volume of the *Collected Papers* contains ninety-nine full reprints of articles covering subjects of interest to the general surgeon, the internist and specialist. A tremendous field is covered by the list of titles in the literature enriched by the Rochester group, ranging from Rosenow's important work in poliomyelitis to the sage conclusions of Alvarez, a master physiologist and clinician.

A great mass of material is marshalled based on a wealth of clinical material. The reader can but note in these papers the same features that impress the visitor to the clinic itself: enthusiasm, sympathy and the highest standards of scientific investigation. The preëminent work of Adson in neurosurgery, of Desjardins in radiotherapy and Eusterman in gastroenterology are evident in these papers. The always interesting and worth while comments of the Senior Mayo on medicine as a science and as an art can never be extravagantly expressed.

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The Surgical Clinics of North America December, 1933 Volume 13, Number 6 Pacific Coast Surgical Association Number and Index Number W B Saunders Company Philadelphia.

This issue is composed of contributions from thirty-seven members of the Pacific Coast Surgical Association. The unusually large number of clinics covers a wide range of subjects but consists chiefly in rather brief reports of interesting cases. The reviewer feels that those numbers that deal with fewer topics but discuss them more thoroughly are of greater practical value.

The Science of Human Reproduction By H M Parshley Published by W W Norton & Company, Inc, New York. 319 Pages Price \$3.50

Professor Parshley's book is a thoroughly satisfactory presentation of the facts, so far as they are known today, concerned with human reproduction. Its purpose is twofold — 'first to answer most of the questions that non professional students and intelligent laymen are likely to ask about the anatomy and physiology of human procreation and secondly, to provide the biological basis for a scientific attitude toward sex and its problems.

This purpose is admirably fulfilled. The author has selected the essential facts and has presented them clearly and with sufficient but not too great detail. The philosophical significance of conditions is kept constantly before the reader, and his interest is increased by the fact that not infrequently the author slips in a subtle bit of humor or some pertinent reference to conditions of modern civilization.

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The book cannot be summarized; those who are interested in this most vital subject should read it for themselves.

Public Health Nursing in Industry By Violet H. Hodgson Published by The Macmillan Company 249 Pages Price \$1.75

The author states that 'the aim of this publication is to indicate the potential field of public health nursing in commerce, trade and industry.' Apparently this is another way of saying that it is intended to point out the possibilities of extending the field of employment for registered nurses. The book would seem to be well calculated to serve this purpose.

In connection with its object also certain biological and medical truths are presented in a way that deserves commendation. The following may be cited as an example:

Nutrition and food are not synonymous. Sufficient food is essential to nutrition but rarely is good nutrition dependent entirely upon food intake.

Important truths well stated platitudes relative to the value of health, unqualified assertions regarding conditions of disputed pathology and dogmatic prescriptions in the matter of the care of specified conditions are, however so interwoven as to make one wish that in connection with the arrangement of the subject matter and its presentation the

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author might have had the benefit of a broad medical education and a clearer appreciation of the limitations of human knowledge

The Surgical Clinics of North America Volume 13, Number 5 October, 1933 Chicago Number Published by W B Saunders Company Issued serially, one number every other month Octavo of 254 pages with 93 illustrations Per clinic year, February 1933 to December 1933 Price, Paper \$12 00, Cloth, \$18 00 net.

The outstanding feature of this issue is a symposium on surgical operations on children given by eight of Chicago's leading surgeons The subjects covered in this group are intracranial tumors, mastoiditis, cystic tumors of the neck, acute empyema, pyloric stenosis, intussusception, the urinary tract, and congenital dislocation of the hip

Bevan reports remarkable results following the use of x ray for an advanced papillary cystadenocarcinoma of the ovary

An excellent brief account of everyday knee injuries is presented by Kellogg Speed

Other clinics offer able discussions of a wide range of conditions of practical interest

Les Arachnoidites Spinales Adhésives By Dem Paulian and D Turnesco Paris Masson et Cie, 1933 95 Pages 8 plates Price 24 francs

Adhesive spinal arachnoiditis is a rare disease The authors have collected twenty one cases and have given a detailed account of the whole subject The etiology is often cerebrospinal meningitis, but other causes have been ascertained, for the condition has followed grippe, typhoid fever, gonococcus infection, or even appendicitis It is occasionally associated with myelitis or radiculitis Trauma has played a rôle in some cases The diagnosis is made almost certain by the injection of Ipiodol into the spinal canal The treatment is operative

The book gives a clear account of the condition, the literature is adequately reviewed, and there are some excellent pictures showing the appearance of Ipiodol in the subarachnoid space In general, one feels that this is a valuable monograph on a relatively little known subject.

Blood Pictures An Introduction to Clinical Haematology By Cecil Price-Jones Third Edition. Published by William Wood & Company Baltimore 72 Pages Price \$2 40

This is a somewhat revised third edition of a book by a well known English haematologist, the first edition of which appeared in 1917 It is small compact, and the material is well arranged It will be found to have less appeal for American readers in view of the fact that methods of blood counting and staining adopted by English haemat

ologists do not coincide with those methods in general use in this country Many of the methods still used by the English have been improved upon, in the last few years, particularly since the stimulation given to haematology by the discovery of the therapeutic value of liver and liver extract. There are six black and white illustrations and five colored plates

BOOKS RECEIVED FOR REVIEW

Laboratory Medicine A guide for students and practitioners by Daniel Nicholson. Published by Lea & Febiger Second Edition 566 Pages Price \$6 50

Annals of the Pickett Thomson Research Laboratory Monograph XVI, Part I. Influenza By David Thomson and Robert Thomson. Published by William Wood & Company, Baltimore Baillière, Tindall and Cox, London, 640 Pages December 1933 issue.

Contagious Diseases What They Are, and How to Deal with Them by W W Bauer First Edition Published by Alfred A. Knopf 218 Pages Price \$2 00

British Spas, Inland and Seaside Resorts, Including New Zealand, South Africa and Canada 1934 Official Handbook of the British Health Resorts Association Published by William Wood & Company, Baltimore J & A Churchill, London, 260 Pages Price 1/

Hypertension and Nephritis by Arthur M. Fishberg Third Edition, thoroughly revised Published by Lea & Febiger 668 Pages Price \$6 50

The Single Woman A Medical Study in Sex Education by Robert Latou Dickinson and Lura Beam Published by The Williams & Wilkins Company 469 Pages

A Text Book of Gynaecology For students and practitioners By James Young Third Edition Published by The Macmillan Company 411 Pages Price \$3 75

Treatment in General Practice by Harry Beckman. Second Edition Published by W B Saunders Company, 1934 889 Pages Price, Cloth, \$10 00

A LATE NOTICE

PHI DELTA EPSILON FRATERNITY

On Monday, April 23, at 8 P.M., the Phi Delta Epsilon Fraternity of Boston University School of Medicine will hold another of its open meetings at the Evans Memorial Hospital Auditorium, 80 East Concord Street, Boston

Dr Frank M Lahey, of the Lahey Clinic, will speak on 'Thyroid Disease, Its Diagnosis and Management' and Dr Lewis M Hurxthal, of the Lahey Clinic, will talk on 'Myxedema, Hypometabolism, and Blood Cholesterol' Dr Allan Winter Rowe, Director of Clinical Research of the Evans Memorial Hospital, will lead the discussion.

The New England Journal of Medicine

VOLUME 210

APRIL 26, 1934

NUMBER 17

INTUSSUSCEPTION—THE RELATION OF THE CEREBRAL CORTEX TO INTESTINAL MOTILITY IN THE MONKEY*

BY JAMES W. WATTS, M.D.,† AND JOHN F. FULTON, M.D.‡

I. INTRODUCTION

THE unexpected appearance of intussusception as a cause of death in a group of monkeys which had been subjected to bilateral removal of the premotor areas of the brain^{10, 16, 17, 22} has necessitated examination of the etiology of intussusception, and it has led to a consideration of the influence exerted by the cerebral cortex on the motility of the gut. During the past three years careful autopsies have been performed in this laboratory on nearly three hundred monkeys and anthropoid apes of various species, almost all of which had been subjected at one time or another to surgical procedures on the brain or spinal cord (with intraperitoneal anesthesia), but intussusception had been observed in only three instances (see below, Autopsy V) in unoperated animals which had died obscurely, presumably from intestinal infestation.

In a recent investigation^{16, 22} upon the functions of the premotor area some ten monkeys have had portions of their frontal lobes, including the premotor areas, removed from both hemispheres. Three of them died soon after the second premotor area was removed (see below, Autopsies I, II, III) with signs of intestinal obstruction, and at autopsy intussusceptions were disclosed. In several other instances, following premotor lesions, intussusceptions have been observed without obstruction. It is conceivable, though scarcely probable that these occurrences were purely fortuitous, but they clearly merited close examination and the present paper records the results of our study.

The possible rôle played by the nervous system in the production of intussusception has often been discussed, but before taking up the question it is essential first to consider the mode of production of intussusception, i.e., the mechanical problem. The clearest description to be found in English literature, is probably that of Fraser¹⁵, who wrote as follows:

"The mechanical process which results in the production of an intussusception is comparative-

ly simple. It would seem that an irregularity in the conduction of the peristaltic wave is the underlying cause. A ring of contraction develops in a segment of the bowel for some reason this is not transmitted, and its persistence at one point results in the invagination of the active portion into the lumen of the passive segment lying in continuity with it. The invagination of the advancing bowel results in a stimulation of the receiving portion, and this stage is actually the most critical of the whole process of intussusception, the contraction of the receiving bowel will have one of two possible effects—it will either expel the invaginating segment, in which case the danger has passed with no more symptoms than a passing colic, or, if its contraction has been longer delayed, it will grasp the entering segment, and actually force it along its invaginating course.

"While we may imagine the mechanical error to be somewhat on the lines described, there is difficulty in discovering the source of the original local peristalsis. It is probable that several factors are at fault.

"Irritation of the mucous membrane has an influence on the production of the error. There is a structural peculiarity of the intestine which predisposes to the disease. It is possible that an error in the arrangement of the splanchnic nervous system may influence the incidence of the disease. There are cases of intussusception in which the inversion of a diverticulum, the presence of a polypus or of a swollen hypertrophied Peyer's patch is the original stimulating factor of the peristalsis."

Fraser¹⁵ mentions the possibility of an error in arrangement of the splanchnic nervous system being a factor in intussusception, and while the suggestion is frequently seen no experimental study of the problem appears to have been made, and certainly there is no record in the literature of an intussusception produced by peripheral stimulation of any of the nerves to the gut.

Clinically intussusception is one of the commonest and most dangerous causes of intestinal obstruction, but it is almost entirely confined to children under five years of age (Homans¹²). Perrin and Lindsay^{3, 4} observed that 69 per cent in their series of intussusceptions were in infants under one year of age. Intussusception

*From the Laboratory of Physiology Yale University School of Medicine.

†Watts, James W.—Instructor in Neurosurgery, Fellow in Neurosurgery School of Medicine, University of Philadelphia, Pennsylvania, 1933. Fulton, John F.—Sterling Professor of Physiology, Yale University, 1930. For records and addresses of authors see "This Week's Issue," page 9-7.

author might have had the benefit of a broad medical education and a clearer appreciation of the limitations of human knowledge

The Surgical Clinics of North America Volume 13, Number 5 October, 1933 Chicago Number Published by W B Saunders Company Issued serially, one number every other month. Octavo of 254 pages with 93 illustrations Per clinic year, February 1933 to December 1933 Price, Paper \$12 00, Cloth, \$16 00 net.

The outstanding feature of this issue is a symposium on surgical operations on children given by eight of Chicago's leading surgeons The subjects covered in this group are intracranial tumors, mastoiditis, cystic tumors of the neck, acute empyema, pyloric stenosis, intussusception, the urinary tract, and congenital dislocation of the hip

Bevan reports remarkable results following the use of x ray for an advanced papillary cystadenocarcinoma of the ovary

An excellent brief account of everyday knee injuries is presented by Kellogg Speed.

Other clinics offer able discussions of a wide range of conditions of practical interest

Les Arachnoidites Spinales Adhésives By Dem Paulian and D Turnesco Paris Masson et Cie, 1933 95 Pages 8 plates Price 24 francs

Adhesive spinal arachnoiditis is a rare disease The authors have collected twenty one cases and have given a detailed account of the whole subject The etiology is often cerebrospinal meningitis, but other causes have been ascertained, for the condition has followed grippe, typhoid fever, gonococcus infection, or even appendicitis It is occasionally associated with myelitis or radiculitis Trauma has played a rôle in some cases The diagnosis is made almost certain by the injection of lipiodol into the spinal canal The treatment is operative

The book gives a clear account of the condition, the literature is adequately reviewed, and there are some excellent pictures showing the appearance of lipiodol in the subarachnoid space In general, one feels that this is a valuable monograph on a relatively little known subject.

Blood Pictures An Introduction to Clinical Haematology By Cecil Price Jones Third Edition Published by William Wood & Company Baltimore 72 Pages Price \$2 40

This is a somewhat revised third edition of a book by a well known English haematologist, the first edition of which appeared in 1917 It is small, compact, and the material is well arranged. It will be found to have less appeal for American readers in view of the fact that methods of blood counting and staining adopted by English haemat

ologists do not coincide with those methods in general use in this country Many of the methods still used by the English have been improved upon, in the last few years, particularly since the stimulation given to haematology by the discovery of the therapeutic value of liver and liver extract. There are six black and white illustrations and five colored plates

BOOKS RECEIVED FOR REVIEW

Laboratory Medicine A guide for students and practitioners by Daniel Nicholson Published by Lea & Febiger Second Edition 566 Pages Price \$6 50

Annals of the Pickett Thomson Research Laboratory Monograph XVI, Part I. Influenza. By David Thomson and Robert Thomson Published by William Wood & Company, Baltimore Baillière, Tindall and Cox, London, 640 Pages December 1933 issue.

Contagious Diseases What They Are, and How to Deal with Them by W W Bauer First Edition Published by Alfred A. Knopf. 218 Pages Price \$2 00

British Spas, Inland and Seaside Resorts, Including New Zealand, South Africa and Canada 1934 Official Handbook of the British Health Resorts Association Published by William Wood & Company, Baltimore J & A Churchill, London 260 Pages Price 1/

Hypertension and Nephritis by Arthur M Fishberg Third Edition, thoroughly revised Published by Lea & Febiger 668 Pages Price \$6 50

The Single Woman A Medical Study In Sex Education by Robert Latou Dickinson and Lura Beam Published by The Williams & Wilkins Company 469 Pages

A Text Book of Gynaecology For students and practitioners By James Young Third Edition Published by The Macmillan Company 411 Pages Price \$3 75

Treatment in General Practice by Harry Beckman. Second Edition Published by W B Saunders Company, 1934 889 Pages Price, Cloth, \$10 00

A LATE NOTICE

PHI DELTA EPSILON FRATERNITY

On Monday, April 23, at 8 P.M., the Phi Delta Epsilon Fraternity of Boston University School of Medicine will hold another of its open meetings at the Evans Memorial Hospital Auditorium, 80 East Concord Street, Boston

Dr Frank M Lahey, of the Lahey Clinic, will speak on "Thyroid Disease, Its Diagnosis and Management" and Dr Lewis M Hurxthal, of the Lahey Clinic, will talk on "Myxedema, Hypometabolism, and Blood Cholesterol" Dr Allan Winter Rowe, Director of Clinical Research of the Evans Memorial Hospital, will lead the discussion.

of the intestine at the site of the obstruction and below it. The intestine for 3 or 4 cm above the obstruction was definitely constricted, that below, dilated.

The discoloration of the intestine at the site of the obstruction indicated that the intussusception was present before death. That it was recent, was shown by the relatively slight disturbance of blood supply and by the presence of a constricted gut above the obstruction. Of course, it is possible that reduction of the intussusception might have occurred spontaneously had the animal lived.

Autopsy III (Corpus callosum IV Intussusception XII) Mature male green monkey (Cercopithecus sabaeus aethiops) Weight 3200 gm Intussusception found in animal following removal of the left motor and premotor area

Previous operations—February 3, 1933 The left motor and premotor areas were extirpated.
March 9, 1933 The corpus callosum was transected.

March 22, 1933 A total transection of the spinal cord was made at the level of the 10th thoracic segment. Following the last operation, the general condition of the animal grew worse. A pressure sore developed over the left hip, so it was sacrificed March 31 1933.

Autopsy findings (March 31 1933)—The stomach was dilated and the intestines were atonic and somewhat distended. In the small intestine 40 cm below the pylorus was an intussusception 3 cm long. The loops of gut below the obstruction were definitely darker in color than the loops above it. The lower part of the intussusciplens was also discolored. The blood vessels in the wall of the intestine above and below the obstruction were very prominent, and especially below there was a diffusion of blood into the mucosa radiating out from the blood vessels.

No inflammatory changes were present in the gastrointestinal tract of the preceding cases (Autopsies I, II and III) nor was there any local abnormality which might be pointed to as the possible cause. There was a disturbance of the blood supply to the intestine below the site of obstruction in all three animals and it is clear that the obstruction was a contributing, and probably the chief cause of death. The following case (Autopsy IV) is that of an animal which had a stubborn diarrhea before it was operated on and was subjected to an experiment in carbohydrate metabolism subsequently.

Autopsy IV (Area 6 Series, No XX) Immature female Macaca mulatta Weight 1800 gm Intussusception found after operation on area 6 in animal which previously had diarrhea

Previous operations This young macaque had a stubborn diarrhea which failed to respond to treatment before an experiment was performed. On March 8 1933 a small area, 2 mm. in diameter was excised from the anterior end of the superior precentral sulcus of the left premotor area.

March 20, 1933 The animal was isolated, given water but no food, and injected daily with phloridzin for an experiment in carbohydrate metabolism. On March 22, a reddish fleshy mass was observed protruding from the rectum.

Autopsy findings (March 22, 1933)—The animal was sacrificed under ether anesthesia. When the abdomen was opened, an intussusception of the descending colon was found. The intussusception was composed entirely of descending colon including the mass protruding from the rectum. The intussusciplens was largely rectum, though the upper 1 cm of it may have been colon. The mucosa of the small and large intestines was slightly pinker and more injected than normal.

Fortunately, during the year, two unoperated animals were found to have intussusception at autopsy. If these had not occurred it might have been a temptation to neglect other factors concerned in the etiology of intussusception and to overstress the influence of the central nervous system. One animal (Autopsy V) presented evidence of a generalized infectious process and marked inflammatory changes in the gastrointestinal tract. No predisposing cause of the intussusceptions could be found in the other animal (Autopsy VI).

Autopsy V (Normal green, III) Cercopithecus sabaeus aethiops Weight 3000 gm Intussusception in unoperated animal that died of a generalized acute toxic process

Past history This was an unoperated animal which had recently arrived in the laboratory. No detailed observations had been made but it was noted that the monkey was not so active and alert as its fellows. The morning of June 17 it was found dead in its cage.

Autopsy findings (June 17 1933)—The great omentum was very hemorrhagic in appearance especially near the blood vessels. The parietal peritoneum contained many diffusely scattered punctate hemorrhages. The visceral peritoneum was also the site of punctate hemorrhages. The intestinal wall was a pea soup green having been discolored by the fecal contents. Considerable gas was present in the intestines.

Further examination disclosed 2 intussusceptions near the junction of the middle and upper third of the small intestine. The more cephalad intussusception was 5 mm in length and the more caudal was 20 mm long. Possibly the discoloration below the second intussusception was greater than that above but the difference was very slight.

The fecal contents had the appearance and consistency of pea soup. The intestinal mucosa was swollen velvety and assumed the color of the feces. A few scattered fresh hemorrhages were noted in the mucosa.

The spleen was swollen and firm to palpation. On cut section it had a septic appearance. The kidneys were swollen and flabby. Pus was present in the left kidney pelvis.

Autopsy VI (Normal green, V) Cercopithecus sabaeus aethiops Weight 2575 gms Intussusception in unoperated animal

Past history This was an immature male green monkey, which had arrived in the Laboratory ten days previously. During the two or three days preceding death it had appeared sick, did not jump about the cage as usual when food and water were placed before it by

occurs twice as frequently in boys as in girls, and is more common in well nourished than in malnourished children (Ochsner³⁰). It is extremely rare in adults, in whom, however, it may be initiated by the drag of a pedunculated benign or malignant tumor (Homans¹⁰).

II PROTOCOLS OF AUTOPSIES

Soon after beginning a study of the effects of localized lesions in the hypothalamus on the heart and the gastrointestinal tract it became obvious that an accurate knowledge of the normal variations in the gastrointestinal tract of primates must be obtained (Watts and Fulton⁴⁰). For this purpose one of us (J. W. W.) performed complete autopsies on all animals that were sacrificed or died during the year, some 80 in number, devoting special attention to the gastrointestinal tract. It was while making these routine examinations that interest was aroused in the problem through the discovery of intussusception with obstruction in several monkeys from which the premotor area had been previously extirpated.

These instances may be described briefly as follows:

Autopsy I (Frontal IV) Adult male Java monkey (Macaca irus) Following cortical extirpation, vomiting and prostration developed. Intussusception found at autopsy.

Previous Operations—July 5, 1932 Both frontal lobes including most of the premotor areas were radically ablated.

October 10, 1932 The remaining cortical tissue anterior to the central sulcus was extirpated from the left hemisphere. There were no gastrointestinal symptoms after either operation.

November 17, 1932 The remaining cortical tissue anterior to the right central sulcus was extirpated.

Following the last operation the animal was unable to sit or stand alone, and it had to be fed. Its general condition and appetite were good until the sixth day after operation when it suddenly became prostrated and vomited. The vomiting continued for several hours and was associated with coarse lateral nystagmus. The operative incision was well approximated, there was no evidence of infection, or of increased intracranial pressure. As it was evident that the animal could not live through the night it was sacrificed under dial anesthesia on the sixth day after operation.

Autopsy findings (November 23, 1932)—Upon opening the abdomen an intussusception 8 cm long was discovered in the small intestine 42 cm below the pylorus (Fig 1). The mesentery had been dragged into the intussusciplens with the intussusceptum. There was a disturbance of blood supply to the intestine indicated by the marked discoloration of the intestine at the site of and below the obstruction.

The intussusception had produced an intestinal

obstruction with an interference of the blood supply to the bowel. This was adequate cause for the prostration and vomiting which were observed. The next two cases are similar, but case 3 is complicated by the presence of a spinal transection.

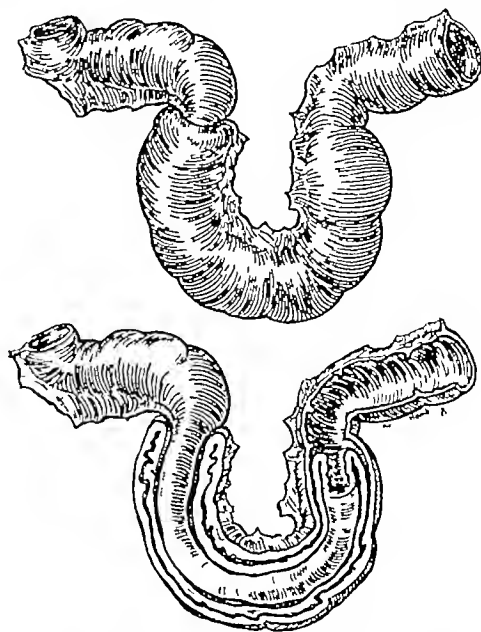


FIG 1 (Autopsy I) A drawing of the obstructive intussusception disclosed in Autopsy I as it appeared externally (above) and after dissection (below)

Autopsy II (Area 6 Series, No 1) Adult Macaca mulatta Weight 3800 gms Intussusception found in animal following bilateral extirpation of motor and premotor areas of the cortex.

Previous Operations—January 5, 1933 After faradic stimulation of areas 4 and 6 of the left hemisphere, area 4 was extirpated.

January 26, 1933 The left bone flap was reelevated, area 6 was stimulated and then extirpated.

February 9, 1933 Through a right sided bone flap, the motor and premotor areas were stimulated, then excised. As usual after removal of the second motor and premotor areas, there was an absence of voluntary power in the contralateral and ipsilateral extremities.

The condition of the animal was good for several days after operation. Although the appetite was good, and it was carefully fed by hand, the animal lost weight. On February 15, it refused food and the following morning was found dead in its cage. No signs of an acute nature such as were observed in the previous case (Autopsy I) were noted in this animal. There was no vomitus in the mouth or on the face.

Autopsy findings (February 16, 1933)—An intussusception was found in the lower ileum 10 cm from the cecum. The intussusception measured 2 cm, the mesentery had been pulled in with the intussusceptum, and there was some discoloration

in cephalad segments reached the contracted segment but did not pass it

10 30 A.M. With the coil at 10 cm Point 2 was stimulated for 1 minute

30" after stimulation was started, a bud was seen forming at the lower end of the cecum

50" the bud was growing in size This was associated with a slight general contraction of the entire cecum

60" a narrow band of contraction was seen in the small intestine and was not transmitted At this time the evagination on the cecum measured 10 mm long and 8 mm in diameter

10 34 A.M. The cecum had been slowly contracting and relaxing since the cortex was stimulated at 10 30, a cycle lasting about 2 minutes

10 35 A.M. All was quiet

10 36 A.M. With the coil at 10 cm, Point 3 was stimulated faradically 3 minutes

20" after stimulation was started, a band of contraction made its appearance 15 mm from the lower end of the cecum

30" contraction of the cecum continued

50" a second constricting band appeared on the cecum proximal to the first

70" a narrow ring-like band was noted circumscribing the small intestine, which was not transmitted

90" a peristaltic wave arising above passed caudally, broke against the narrow contracted segment The constriction remained localized in its original segment of gut Relaxation was occurring in the cecum

120" the cecum was again in the process of contraction and a ring-like band was forming in another segment of small intestine which did not move down the gut

180" all motility had ceased.

10 50 A.M. The intestines were quiet

11 05 A.M. The left vagus nerve was exposed in the neck

11 15 A.M. The left vagus nerve was stimulated with the coil at 10 cm The heart ceased 1 to 2 seconds, resumed beating, attained a rate of 60 and while still being stimulated resumed its usual rate The pyloric region of the stomach contracted, but no peristalsis or segmental contractions occurred in the intestines

11 18 A.M. Spontaneously, a bud was seen forming on the cecum When the vagus nerve was stimulated, the cecum relaxed When the stimulus was removed the cecum again contracted

11 22 A.M. Spontaneously, a bud appeared on the cecum and a ring-like band of contraction was seen forming in the small intestine With the coil at 10 cm, Point 6 was stimulated This was followed by acceleration in the movement in both cecum and small intestine

11 45 A.M. The right cerebral hemisphere was exposed At this time there was neither peristal-

sis nor other signs of activity in the gut Short faradic stimuli applied to Point 5 and other points on the motor area of the right hemisphere excited normal responses in the extremities, but no effect on the intestines

11 50 A.M. Point 7 on the right hemisphere was stimulated 1 minute with the coil at 11 cm

30" after stimulation was started the tip of the cecum was evaginated and a narrow ring-like band circumscribed the small intestine, which was not transmitted

11 55 A.M. Point 7 was again stimulated with similar results

12 00 Noon With the coil at 11 cm, Point 6 was stimulated 1 minute Activity was observed in the cecum after 50" but none in the small intestine

12 05 P.M. Point 1 was stimulated 2 minutes with the coil at 11 cm

20" after application of the electrode, the lower end of the cecum contracted vigorously

30" a strong ring like band of contraction appeared in the small intestine but was not transmitted

60" the cecum was beginning to relax.

90" the cecum had relaxed, but the ring of contraction was still present in the small intestine

12 10 P.M. Point 3 was again faradized with similar responses to those elicited at 12 05 P.M.

12 24 P.M. 0.4 cc of ephedrine was given intramuscularly

12 29 P.M. The heart sounds were strong and rate unchanged The intestines appeared somewhat dilated and flabby, and slightly paler

12 30 P.M. The intestines and brain were definitely paler than before With the coil at 10 cm, Point 1 was stimulated 1 minute Within a few seconds of the beginning of stimulation, the lower part of the cecum was contracting vigorously A narrow ring of constriction appeared in the small intestine The ring circumscribing the intestine widened into a band It reached 10 mm, then 15 mm It was not transmitted Peristaltic waves arising in cephalad segments broke against the contracted segment, but were unable to pass or to alter the band of contraction One peristaltic wave more forceful than the rest reached the ring of contraction, and simultaneously invagination of the active portion of the gut into the passive segment lying in continuity with it occurred An intussusception was present which measured 15 mm in length

12 36 P.M. The intussusception was still present and unaltered in appearance

Stimulation of the cerebral cortex, particularly area 6 (Fig 2), excited activity of an abnormal type in the small intestine A ring of contraction developed in a segment of bowel and for some reason was not transmitted Its per-

an attendant It was found dead in its cage the morning of July 1, 1933

Autopsy findings (July 1, 1933)—When the peritoneal cavity was opened, an excessive amount of free fluid was present. There was an intussusception of the ileum through the ileocecal valve into the cecum. The intussusciptens measured 12 cm. In the ascending colon was an intussusception measuring 7 cm with marked discoloration of the involved segments as well as the bowel below the obstruction. A third intussusception was present in the descending colon, 8 cm long, likewise with marked circulatory disturbances at the site and below the obstruction. The mucosa of the rectum was normal in color and appearance. There was no evidence of a generalized enteritis or colitis.

III CORTICAL STIMULATION

Though suggestive the first three autopsies described above would in themselves allow no definite conclusions, and we were therefore led to investigate the effect of cortical stimulation on gastrointestinal motility. That cortical stimulation influences peristalsis has been known since the classical experiments of Bochefontaine⁸ in 1876. He found that stimulation of the region of the sigmoid gyrus of the dog usually diminished or completely inhibited rhythmic contractions of the stomach. However, the inhibition was often immediately preceded by a strong peristaltic contraction of the entire pyloric region. Sometimes peristalsis was excited in various segments of intestine, now in the duodenum, again in the ileum.

The subjects of most of our experiments were monkeys having previous intracranial operations, which were to be sacrificed to obtain the brain for anatomical studies. This accounts for some of the apparently bizarre procedures antedating the present experiments. Such animals, however, were often of more value than a normal animal in analyzing the results, since they allowed more precise localization of excitable areas.

Methods—After the cortex had been exposed the peritoneal cavity was opened. The cortex was kept moist with warm, physiological saline. In the earlier experiments the intestines were kept moist by sprinkling them with saline, but in later experiments, the animal was placed in a saline bath at 38° C, so that the intestines were largely immersed in saline, sometimes floating somewhat, depending on their gaseous content. The temperature of the fluid was kept constant by means of an electric light bulb.

In Experiments 1, 7, 8, 11, 12, and 13, the cortex was stimulated with a unipolar electrode with the indifferent electrode in the rectum. To avoid the possibility of stimulation from the indifferent electrode or the criticism its use might cause, in Experiments 2, 3, 4, 5, 6, 9, and 10, the cortex was stimulated by means of a bipolar electrode. Using a Harvard induc-

torium, the best results were usually obtained with the coil at 9 or 10 cm. The points most frequently used for stimulation in the various experiments are indicated diagrammatically by arabic numerals in figure 2.

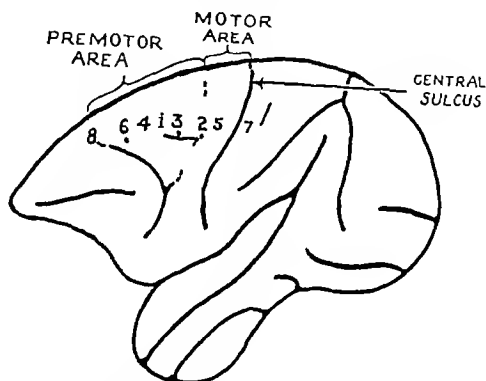


FIG 2 Diagram of the cerebral hemisphere of a monkey showing the points stimulated. This applies to all experiments (1 to 13).

Experiment 1 (Corpus Callosum V Intussusception I) Mature *Macaca mulatta* Weight 3450 gm. Intussusception in small intestine and vigorous activity in cecum produced by faradic stimulation of premotor area.

Previous operations—February 17, 1933, the main trunk of the anterior cerebral artery was ligated at the genu of the corpus callosum, and the callosum sectioned. No impairment of motor function followed. The animal had diarrhea which failed to respond to treatment.

Observations upon intestine—March 24, 1933. Under ether anesthesia the left bone flap was reelevated and the peritoneal cavity opened. The blood vessels in the intestinal walls were considerably injected. Observations from 9 40 to 10 00 A.M. showed very slight peristaltic movements of the small intestines, but none in the stomach or large intestine. Throughout the experiment the intestines were kept moist by sprinkling them with normal saline at 38° C. 10 20 A.M. With the coil at 10 cm. Point 1 (Fig 2) was stimulated for 1 minute with a unipolar electrode with the indifferent electrode in the rectum.

20" after the application of the electrode to the cortex the cecum began to contract. A bud-like evagination formed on the lower end of the cecum. As contraction of the musculature continued, the bud constricted at the base 1 cm. from the tip.

40" after application of the electrode to the cortex, a narrow ring-like band of contraction was seen circumscribing the small intestine. The band gradually widened from 1 to 2 mm and finally to 10 mm. The band remained contracted and was not transmitted down the gastrointestinal tract. A peristaltic wave arising

through it. The activity lasted 2 minutes after the stimulus ceased and gradually relaxed. Point 4 was stimulated 6 different times, each time causing a striking "peristaltic rush." When the electrodes were moved a few mm distant from Point 4, stimulation failed to excite peristalsis.

Once during the experiment, the anesthesia became too light. When ether was administered, the animal struggled and a "peristaltic rush" occurred in the large intestine similar to that produced by stimulation.

Experiment 4 (Bouton V Intussusception XII). Immature female Macaca mulatta. Weight 2000 gm. Rhythmic contractions of the cecum initiated by faradic stimulation of area 6.

Previous operations. March 27, 1933, the left premotor area was extirpated with a resulting right hemiparesis.

Observations upon intestines—March 30, 1933. The right motor and premotor areas were exposed and the abdomen was opened under ether anesthesia. The small intestine was collapsed. The large intestine contained a small amount of gas and fecal material. No peristaltic activity was visible in the intestines. The animal was placed in a bath of normal saline at 38° C so that the intestines were partly submerged and partly floating. The change in environment did not result in increased motility of the intestines.

Stimulation of Point 4 faradically with a bipolar electrode 1 minute elicited contraction of the cecum. After a latent period of 30 seconds a bud-like process appeared on the end of the cecum. When Point 4 was stimulated 6 minutes later, the latent period was only 15 seconds and rhythmic contractions were set up at the rate of 1 cycle per minute, i.e. contraction occurred producing a bud and relaxation followed within a minute. Similar activity in the cecum was elicited by stimulation of Point 3 (Fig. 2).

At no time was motility observed in the small intestine or colon. No response could be obtained in the cecum 20 minutes after the first cortical stimulation. Likewise, stimulation of the motor area with twice the usual strength failed to yield movement of the extremities at this time.

Experiments 2, 3 and 4 confirm the results given in detail in Experiment 1. Stimulation of area 6 excited rhythmic activity in the cecum of all 3 animals. In Experiments 2 and 3, ring-like bands of contraction which were not transmitted appeared in the small intestine under the influence of premotor stimulation. In Experiment 3 a transient intussusception was observed, and a "peristaltic rush" was produced in the large intestine.

It was observed that the responses of the gas-

trointestinal tract to cortical and vagus stimulation were dissimilar. When the vagus nerve was stimulated in the neck, contraction of the pyloric region of the stomach occurred, followed by contraction of the body of the stomach. When the cortex was stimulated, the stomach did not appear to be affected, but definite activity resulted in the intestines. The observations suggested selected action on specific fibers or that some pathway other than the vagus might contain motor fibers to the gastrointestinal tract. As one method of attacking the problem several animals were vagotomized and the cortex stimulated. The following experiments (5, 6, and 7) show the results as well as some of the difficulties of interpretation.

Experiment 5 (Hypothalamus VIII Intussusception XVI). Mature male Macaca mulatta. Weight 6300 gm. Activity of cecum and small intestine elicited by faradic stimulation of the premotor area. Slight motility excited in small intestine by cortical stimulation after bilateral vagotomy.

Previous operation. A small lesion was made in the hypothalamus by the transcallosal route. Except for a rapid gain in weight following operation, the animal was normal in every respect.

Observations upon intestines—June 9, 1933. The experiment was performed under ether anesthesia. A right osteoplastic flap was elevated and both vagus nerves were exposed in the neck. Immediately after the peritoneal cavity was opened the animal was placed in a bath of normal saline at 38° C. The small intestine contained a little gas, but most of the intestine lay with the walls in contact, the cecum was relaxed, but the colon was constricted. No peristalsis or segmentation was seen. A spontaneous contraction of the cecum was observed before electrical stimulation was begun. A definite bud-like evagination appeared and relaxed.

Faradic stimulation of Point 1 (Fig. 2) initiated vigorous rhythmic contractions of the cecum associated with mild peristaltic movements of the small intestine. Activity in the cecum continued 3 minutes after the stimulus ceased. On one occasion during the experiment the depth of anesthesia became very light. When ether was administered the animal struggled and during the struggles vigorous motility in the cecum of a rhythmic character appeared.

Cutting the left vagus nerve in the neck appeared to cause pain, and the cecum contracted strongly. While the cecum was in a state of moderate contraction the left vagus nerve was sectioned. Relaxation and dilatation of the cecum and colon appeared immediately, but no change was noted in the small intestine. Considerable respiratory difficulty ensued.

Point 1 stimulation of which excited activity

sistence at one point, aided by peristaltic waves from cephalad segments resulted in invagination of the active portion into the lumen of the passive segment lying in continuity with it. The invagination of the advancing bowel resulted in stimulation of the receiving portion which grasped the entering segment. The administration of adrenalin intramuscularly did not interfere with the effects of cortical stimulation. After the intussusception had persisted 10 minutes, the abdomen was closed and dial was given intraperitoneally. When examined 2 hours later the intussusception had disappeared.

No less striking in this experiment was the rhythmic activity excited in the cecum by cortical stimulation. After activity had been initiated the tip of the cecum often continued to contract and relax for several minutes after stimulation had ceased.

Short stimuli such as give good motor responses of the digits (2-5 seconds) did not excite movements of the intestine. When a 1 minute stimulus was applied, usually 15 to 30 seconds elapsed after stimulation was begun before activity was noted in the intestines. Working against a static background, no inhibitory effects of cortical stimulation were observed.

A detailed protocol of each experiment would require excessive space. However, it would appear advisable to give a summary of each experiment in which the cortex was stimulated because many differences are presented which will be referred to in the discussion.

Experiment 2 (Intussusception IX Area 6, Series XXV) Immature female Macaca mulatta. Weight 1700 gm. Excitation of activity in cecum and small intestine by stimulation of area 6. Using bipolar electrode under ether anesthesia.

Previous operations. There was a paralysis of the left lower extremity and a sensory level in the left mid-thoracic region as a result of a left hemisection of the spinal cord made at 10 00 A.M. March 24, 1933.

Observations upon intestine—March 24, 1933. Under ether anesthesia the right motor and premotor areas were exposed and the abdomen was opened. Most of the small intestine was atonic and collapsed, and the large intestine was filled with gas. Blood vessels in the intestinal walls were prominent. No intestinal motility was observed.

Faradic stimulation of the motor and premotor areas 5 to 10 seconds caused the usual responses in the extremities. This was repeated several times but no changes in the appearance or motility of the intestines were observed.

Stimuli lasting 2 to 4 minutes applied to the premotor area (Points 1 and 2, Fig. 1) initiated great activity in the cecum and small intestine. Rhythmic contractions of the tip of the cecum

were set up at the rate of 2 or 3 a minute, often continuing after the stimulus was removed. A ring-like band of contraction in the small intestine was often produced. Usually a narrow band of contraction appeared, relaxed, contracted again, but was not transmitted. Occasionally during stimulation, a peristaltic wave was seen in the small intestine passing caudally 2 to 3 cm, then in the opposite direction in the same piece of gut.

The latent period from the application of the stimulus to the appearance of intestinal activity, was usually as great as 60 seconds during the first part of the experiment, and often as little as 10 seconds during the latter part.

Stimulation of Point 2 produced the greatest activity. Often no increase in motility was obtained from nearby points.

Experiment 3 (Area 6, Series XXII Intussusception X) Immature male Macaca mulatta. Weight 2300 gm. Production of peristalsis and a transient intussusception in the small intestine, and a "peristaltic rush" in the large intestine by stimulation of area 6.

Previous treatment. Food was withheld from the animal four days and phloridzin injected daily for an experiment in carbohydrate metabolism. At the beginning of the metabolism experiment the animal was normal except for a diarrhea which had been present several days.

Observations upon intestine—March 29, 1933. Under ether anesthesia the left cerebral cortex was exposed and the abdominal cavity opened. The liver presented a typically diabetic appearance. The small intestine was completely collapsed with the walls in contact and longitudinal striations plainly visible. The transverse colon had a beaded appearance, but there were no bands of constriction. No activity was observed in the gastrointestinal tract. The intestines were floated in a bath of normal saline at 38° C. Within a few seconds peristalsis appeared in many loops of small intestine, but ceased in 5 minutes.

Stimulation of Point 1 (Fig. 2) with a bipolar electrode excited ring-like bands of contraction in the small intestine which were not transmitted. After this point had been stimulated faradically several times for 1 minute each, an intussusception made its appearance. Ten minutes after it was first observed, the intussusception spontaneously released itself.

One minute faradic stimulation of Point 4 initiated a vigorous "peristaltic rush" in the descending colon. The wave of contraction began 15 seconds after the application of the electrode. This was transmitted rapidly through 16 to 18 cm, the colon contracting down like a cord and straightening out like a coiled rubber tube when a stream of water is passed

animal (protocol not presented) with generalized peritonitis failed to give the usual intestinal response on cortical stimulation. Using dial as an anesthetic, cortical stimulation failed to excite intestinal activity. This is well demonstrated in Experiment 8 and confirmed by the use of dial in the latter part of Experiment 10. Whether or not it has any significance here, it may be noted that Bucy⁹ was unable to elicit movements of the ipsilateral extremities under this anesthetic, though he could obtain them under ether.

Experiment 8 (Intussusception III) Medium sized Macaca mulatta. Weight 2250 gm. Under dial anesthesia, cortical stimulation had no influence on intestinal motility.

Previous operations. March 8, 1933, under dial anesthesia, Dr. Paul C. Bucy, who was studying the effects of cortical stimulation on ipsilateral movements of the extremities, had repeatedly stimulated area 6. No movements of the ipsilateral extremities could be elicited, but the contralateral extremities responded essentially as under ether anesthesia.

Observations upon intestines.—March 8, 1933. The peritoneal cavity was opened at the conclusion of the experiment noted above. The stage of anesthesia was very light. The small and large intestines were atonic or relaxed, and the blood vessels were injected. No peristalsis was observed.

Points 1, 2, 3, 4 and others were stimulated with a bipolar electrode, gradually increasing the strength to well above that usually employed. No response was seen in the intestines and their appearance was not altered.

Application of the electrode to the peritoneal surface of the small intestine excited a ring-like band of contraction at the site of the stimulus. The contraction appeared after 5 to 10 seconds of stimulation and was not transmitted.

Stimulation of the left vagus nerve in the neck 15 seconds gave the usual cardiac response and a vigorous contraction of the pyloric region of the stomach, but no alteration in the intestines. When the nerve was stimulated 45 seconds similar results occurred and in addition very gentle intestinal peristalsis.

In most of our earlier experiments, the chief aim was to determine whether or not cortical stimulation had any influence on gastrointestinal motility. Since the autopsies suggested a relationship with area 6, this region was usually chosen first for stimulation. After this fact had been established, other areas within the operative field were stimulated. Experiments 9 and 10 demonstrate that intestinal motility can be produced by faradic stimulation of the postcentral gyrus and the frontal region anterior to area 6. Attention is called to the

fact that stimulation of the postcentral gyrus within 1 or 2 mm. of the central sulcus excited intestinal activity, but did not excite movements in the extremities such as would have been the case had there been a spread of current. Also as control, after stimulating a point on the cortex, the electrode was transferred to the falx cerebri adjacent to it. When there was any indication of a spread of current, the strength of the current was reduced and new observations made. Experiment 10 is considered significant as suggesting a possible influence of the frontal and postcentral areas upon intestinal movements, because area 6 had been ablated at a previous operation.

Experiment 9 (Corpus callosum IX Intussusception XV) Immature Macaca mulatta. Weight 2300 gm. Motility of cecum initiated by faradic stimulation of the premotor area and the postcentral gyrus.

Previous operations.—On May 19, 1932, a left bone flap was elevated, the anterior cerebral artery ligated at the genu of the corpus callosum, and the corpus callosum sectioned. Three days later after stimulation of areas 4 and 6 on the right side these were extirpated. The animal's condition remained good, and during the following week it recovered considerable use of the left arm and leg so that locomotion was quite good.

Observations upon intestines.—May 31, 1933. Under ether anesthesia, the left bone flap was reelevated and the abdomen opened. No motility was observed in the small intestine or the colon. The cecum was seen to contract slowly once over a period of five minutes. The intestines were floated in normal saline 38° C without excitation of motility.

Faradic stimulation of Point 1 (Fig. 2) with a bipolar electrode for one minute initiated a vigorous contraction of the cecum. The contraction started 20 seconds after the electrode was applied to the cortex. Rhythmic contractions of the cecum continued after the stimulus ceased, a cycle of contraction and relaxation lasting about one minute.

Likewise stimulation of Point 7 on the postcentral gyrus excited rhythmic contractions of the cecum. Spread of current was excluded by applying the electrode to the falx cerebri near Points 1 and 7 without effect.

No motility was observed in the small intestine or the colon. No further responses could be obtained in the cecum 20 minutes after the first cortical stimulus. However, faradic stimulation of the left vagus nerve was still effective, causing slowing of the heart, contraction of the pyloric region of the stomach, but no effect on the intestines. A second vagal stimulus appeared to excite activity in the cecum, and a

ity in the cecum and small intestine before vagotomy, was again stimulated faradically. After a latent period of 30 seconds, a ring-like band of contraction made its appearance in the small intestine. Five minutes later, Point 1 was again stimulated, and this time after 90 seconds' stimulation, a similar band of contraction appeared in the small intestine. The cecum responded in no way.

The animal died a respiratory death. No peristalsis or segmentation was present during the respiratory difficulties just preceding death. However, 2 minutes after the pulse and respiration ceased, vigorous activity began in the cecum, and active peristalsis and forceful rhythmic segmentation were observed in the small intestine. This extreme activity lasted 3 to 4 minutes and then ceased rather abruptly.

Experiment 6 (Pilocarpine XIII Intussusception XIV) Immature female Cercopithecus sabaeus. Weight 2500 gm. Initiation of peristaltic activity by stimulation of area 6 after bilateral vagotomy.

Previous operations. December 8, 1932, a complete subdiaphragmatic vagotomy was done on the left side. February 17, 1933, the right vagus nerve was sectioned in the neck, sparing the laryngeal branch.

Observations upon intestines—March 28, 1933. Both motor and both premotor areas were exposed using ether anesthesia. The left vagus nerve was dissected free in the neck. Both cut ends of the previously sectioned right vagus were identified. The distal end of the right vagus was adherent to the recurrent laryngeal nerve.

The animal was placed in a bath of normal saline at 38° C when the peritoneal cavity was opened. The small intestines were distended with gas. Several slowly contracting isolated bands were noted and one peristaltic wave was seen moving down the gut. The cecum was dilated and the colon was constricted, both were quiet.

Stimulation of Point 1 and Point 2 of the right hemisphere exerted no response in the gastrointestinal tract. When the peripheral stump of the right vagus nerve was stimulated it produced definite activity in the small intestine. One minute stimulation of Point 1 of the left hemisphere caused ring-like bands of contraction in the small intestine within 15 seconds after the application of the electrodes. The segmental contractions were maintained 3 or 4 minutes. After section of the left vagus nerve faradization of the peripheral end produced the characteristic cardiac and respiratory responses, but no effect on the gastrointestinal tract.

After carefully destroying all nerve fibers in and near the carotid sheath on both sides of the neck including any part of the vagi that might

possibly have been left behind, Point 1 on area 6 of the left hemisphere was again stimulated. Again intestinal activity was increased, though the response was definitely less than those obtained in the early part of the experiment.

Experiment 7 (Intussusception II Pilocarpine XVIII) Immature female Macaca mulatta. Weight 1700 gm. After previous complete subdiaphragmatic vagotomy, no response of intestinal tract followed cortical stimulation.

Previous operations. On February 17, 1933, a complete bilateral subdiaphragmatic vagotomy was performed.

Observations upon intestines—March 7, 1933. Under ether anesthesia the left cerebral cortex was exposed. When the peritoneal cavity was opened, considerable activity was present in the gastrointestinal tract. A ring-like band of contraction 3-4 mm wide was being transmitted down the small intestine at the rate of a normal peristaltic wave. The band of contraction was sharply delimited and very pale due to the fact that blood was being forced out by the tightly contracted intestinal musculature. In addition, the usual type of peristaltic waves was observed in the small intestine. The cecum was under going rhythmic contractions. In the systolic phase, the evagination formed on the end of the cecum resembled a vermiform appendix. This type of activity continued uninterrupted during the 20 minutes of observation.

With the unipolar electrode and the indifferent electrode in the rectum, various points on the cortex were stimulated. Normal motor responses of the arm and leg were obtained from areas 4 and 6 (Fig 2). However, no effect was observed on motility of the intestinal tract even when the strength and duration of cortical stimulation were more than doubled. The intestinal movements were neither accelerated nor inhibited from any part of the cortex.

After first stimulating the premotor area and obtaining good responses in the intestinal tract, a bilateral vagotomy was done in the neck. Following vagotomy, cortical stimulation appeared to cause an increase in motility, though definitely less than before vagotomy (Experiments 5 and 6). The latent period was unusually long before the response was noted. One naturally asks if all the vagus fibers in both sides of the neck were destroyed. It is believed that all fibers in both sides of the neck were destroyed. In one case Bechterew and Mislowski⁶ observed contraction of the small intestine on stimulating the last two thoracic and the first lumbar nerves.

However, cortical stimulation in one animal (Experiment 7), which previously had a complete bilateral subdiaphragmatic vagotomy, failed to elicit responses in the intestines. One

half to three hours. The abdomen was untouched.

Autopsy. On sacrificing the animal and opening the peritoneal cavity an intussusception one and one-half cm. long was disclosed 30 cm. below the pylorus. There was no evidence of a disturbance of blood supply to the intestine.

The pyloric sphincter and antrum were greatly contracted and were very firm on palpation. The fundus and cardiac portions of the stomach were more dilated. When the stomach was opened it was seen to be filled with thick mucoid material which could not be washed off with a stream of water. The crests of the mucosal folds were speckled with punctate hemorrhages. The intestine proximal to the intussusception was filled with the whitish glairy, mucoid secretion from the stomach.

IV DISCUSSION

In the preceding experiments it has been shown that faradic stimulation of the premotor area and certain adjacent parts of the cerebral cortex of monkeys excites the intestines to vigorous motor activity. It seemed difficult, however, to harmonize this fact with the occurrence of intussusceptions following the removal of the premotor and adjoining areas of cortex. A possible solution to the paradox has come from a survey of relevant literature which has indicated that the gut representation in the cortex includes both excitatory and inhibitory units. Cortical ablations appear to cause enhancement of motor activity through the release from the inhibitory components and through a generalized disturbance of the delicate balance normally existing between these mutually antagonistic elements.

1 *Faradic stimulation.* The earliest reference to the effects of cortical stimulation on intestinal motility which could be found was by Bochefontaine⁵ in 1876. He demonstrated that stimulation in the region of the sigmoid gyrus of the dog usually diminished or even completely stopped rhythmic contractions of the stomach. However, the inhibition was often immediately preceded by a strong peristaltic contraction of the entire pyloric region. Movements of the small and large intestines were also found to occur under the influence of cortical stimulation. Peristalsis appeared in different parts of the small intestines in varying intensities, sometimes the duodenum was active, at others, the ileum. Many times peristalsis of the large intestine was so forceful that it carried the fecal contents ahead of it. Exceptionally, cortical stimulation yielded no appreciable results.

Blasko¹⁸ observed that stimulation of the cortex in the region of the cruciate sulcus in the dog caused inhibition of the cardiac sphincter. He obtained contraction of the cardia and the wall of the stomach by stimulating the corpora quadrigemina. Openchowski²¹ localized an area close to the cruciate sulcus from which he elicited opening of the cardia and closing of the

pylorus. Like Blasko, he produced similar changes by stimulating the corpora quadrigemina and also by stimulating the corpus striatum and the lenticular nucleus. Bechterew and Mislawski⁶ by faradic stimulation of the sigmoid gyrus and the area posterior were able to change the condition of the intestinal musculature. Occasionally the occipital region gave similar results but stimulation of other areas was entirely without effect. The usual effects were an alteration in tonus and an increase in peristaltic activity in a few loops of intestine. Stimulation excited contraction and relaxation of the small intestine followed by similar movements in the large intestine.

Osipov²² isolated two points on the sigmoid gyrus anterior to the cruciate sulcus, one at the outer margin of the sulcus and the other close to the inner margin of the hemisphere. From these points he excited contraction of the large intestine. In some animals stimulation was effective at the outer point in other animals at the inner point but not from both and nothing could be obtained from the surrounding cortical tissue. von Pfungen²³ observed an increase in peristalsis on stimulating the sigmoid gyrus and its surroundings. Often however from the same cortical area stimulation inhibited peristaltic movements.

It appears then that stimulation of certain points in and around the sigmoid gyrus results in increased peristalsis, from other points in this region peristalsis is inhibited and stimulation of still other points has no noticeable influence on gastrointestinal motility.

The results of other authors are in complete accordance with our observations. Corneal stimulation in our experience sometimes produced peristalsis in the small intestine and at others ring-like bands of contraction which were not transmitted. In some animals activity could be obtained only in the large intestines. Usually intestinal motility could be influenced from most of the premotor area often from the prefrontal region and occasionally from the postcentral gyrus. Yet not every point within this circumscribed area on stimulation gave increased peristalsis. Inhibition of peristalsis such as was obtained by other experimenters from cortical stimulation was not observed, but this may be due to the fact that there was little peristalsis in the monkey under the conditions of the experiments. In one animal, from which such striking "peristaltic rushes" in the large intestine were initiated, stimulation was effective only from the anterior margin of the superior precentral sulcus.

2 *Ablation and release of junction.* What effects on the gastrointestinal motility have been noted following removal of the influence of the cerebral cortex or certain parts of it?

third appeared to inhibit it, i.e., no effect was noted as long as the electrodes were on the nerve, but motility began as soon as they were removed

Experiment 10 (Intussusception XVII) June 27, 1933 Macaca mulatta Weight 2000 gm After previous extirpation of area 6, faradic stimulation of postcentral gyrus and frontal region excited intestinal activity

Previous operations—January 11, 1933, area 4 was excised from the left hemisphere

February 6, 1933, through a right bone flap area 6 was ablated

Observations upon intestines The right bone flap was reelevated under ether anesthesia and the peritoneal cavity opened. The animal was placed in normal saline at 38° C partly submerging the intestines. The stomach was small. Little material was present in the small intestine and the walls were often in contact with each other. Neither peristalsis nor rings of contraction were observed.

Stimulation of the crater at the site of ablation of the premotor area produced no responses in the extremities or the intestines. However, faradic stimulation with the bipolar electrode of Point 7 (Fig 2) on the postcentral gyrus and Point 8 in the frontal region excited definite responses. Peristalsis involving one or two segments and occasionally a "peristaltic rush" was produced by stimulating these areas. No ring-like bands of contraction were observed.

Stimulation of area 4 caused the usual motor responses in the extremities, but none in the gut.

Several times when the depth of anesthesia became light and ether was administered, the intestine was seen to relax or become atonic. Peristalsis was never excited by the administration of ether, as in some other experiments, but in this one no remarks were made on the presence or absence of an excitement stage.

After the preceding observations had been completed, dial was given intraperitoneally. Two hours later, the small intestine was uniform in calibre, there were no constricting rings. Mild peristalsis was seen in several segments of small intestine for 2 or 3 minutes after the abdomen was reopened. At this time, stimulation of the frontal and postcentral gyri, with the same duration and strength of stimulus, failed to excite any response in the intestines. Stronger stimuli were also ineffective.

In the following experiments area 6 was stimulated two and one-third seconds per minute for two and a half to three hours and movements of the extremities observed. The abdomen was not opened until the stimulation experiment ended. In all three animals the gastrointestinal tract presented signs of excessive

activity and all had intussusceptions of recent occurrence. As far as the gastrointestinal tract is concerned, the conditions were physiological, as the peritoneal cavity was not opened. Another point illustrated is that repeated short faradic stimuli are effective in exciting activity in the intestine.

Experiment 11 (Area 6 III) Macaca mulatta. Weight 1450 gm Repeated brief stimulation of premotor area Autopsy four recent intussusceptions in ileum

Previous experiments—On January 12, 1933, the left motor area had been removed, and on February 23, both cerebral hemispheres were exposed and stimulated faradically. No motor responses could be obtained from the left hemisphere, but the right hemisphere yielded vigorous motor responses which were studied over a period of three hours during which stimuli were applied intermittently to the motor and premotor area.

Autopsy (February 23, 1933) The animal was sacrificed soon after the previous experiment. When the peritoneal cavity was opened, four separate and distinct intussusceptions were disclosed in the lower ileum, the first about 18 inches below the pyloric sphincter, and the fourth, which was an inch in length, was 5 inches from the ileocecal valve. The blood supply to the ileum appeared normal, and all four intussusceptions were clearly recent. The small intestines also showed intermittent rings of spastic contraction similar to those described in the preceding experiments.

Experiment 12 (Intussusception VII Area 6 XVI) March 7, 1933 Immature Macaca mulatta Weight not determined Repeated short stimuli to area 6 with abdomen intact Intussusception at autopsy

Previous experiment—March 7, 1933, under ether anesthesia area 6 was stimulated two and a third seconds per minute for 3 hours by workers who were studying the relation of this area to movements of the extremities.

Autopsy When the animal was sacrificed immediately after the preceding experiment, an intussusception one and one-half cm long was found in the ileum 41 cm below the pylorus. There was no disturbance of blood supply. Eight cm caudally a constricted segment of gut was beginning to enter the relaxed segment in continuity with it, a fold having formed along the periphery opposite the mesentery.

The pyloric region of the stomach was markedly contracted and the body measured only three and one-half cm in diameter. The mucosa was thrown into high folds.

Experiment 13 (Area 6 XV) March 4, 1933 Immature Macaca mulatta Weight not determined Faradic stimulation of area 6 of short duration repeated Intussusception disclosed on opening abdomen

Previous experiment—March 3, 1933 For the purpose of making observations on the extremities, the premotor area was stimulated two and one-third seconds per minute for two and one-

half to three hours. The abdomen was untouched.

Autopsy. On sacrificing the animal and opening the peritoneal cavity an intussusception one and one-half cm long was disclosed 30 cm below the pylorus. There was no evidence of a disturbance of blood supply to the intestine.

The pyloric sphincter and antrum were greatly contracted and were very firm on palpation. The fundus and cardiac portions of the stomach were more dilated. When the stomach was opened it was seen to be filled with thick mucoid material which could not be washed off with a stream of water. The crests of the mucosal folds were speckled with punctate hemorrhages. The intestine proximal to the intussusception was filled with the whitish, glairy, mucoid secretion from the stomach.

IV DISCUSSION

In the preceding experiments it has been shown that faradic stimulation of the premotor area and certain adjacent parts of the cerebral cortex of monkeys excites the intestines to vigorous motor activity. It seemed difficult, however, to harmonize this fact with the occurrence of intussusceptions following the removal of the premotor and adjoining areas of cortex. A possible solution to the paradox has come from a survey of relevant literature which has indicated that the gut representation in the cortex includes both excitatory and inhibitory units. Cortical ablations appear to cause enhancement of motor activity through the release from the inhibitory components and through a generalized disturbance of the delicate balance normally existing between these mutually antagonistic elements.

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It appears, then, that stimulation of certain points in and around the sigmoid gyrus results in increased peristalsis, from other points in this region peristalsis is inhibited, and stimulation of still other points has no noticeable influence on gastrointestinal motility.

The results of other authors are in complete accordance with our observations. Cortical stimulation in our experience sometimes produced peristalsis in the small intestine and at others ring-like bands of contraction which were not transmitted. In some animals activity could be obtained only in the large intestines. Usually intestinal motility could be influenced from most of the premotor area often from the prefrontal region and occasionally from the postcentral gyrus. Yet not every point within this circumscribed area on stimulation gave increased peristalsis. Inhibition of peristalsis such as was obtained by other experimenters from cortical stimulation was not observed, but this may be due to the fact that there was little peristalsis in the monkey under the conditions of the experiments. In one animal, from which such striking "peristaltic rushes" in the large intestine were initiated, stimulation was effective only from the anterior margin of the superior precentral sulcus.

2 *Ablation and release of function.* What effects on the gastrointestinal motility have been noted following removal of the influence of the cerebral cortex or certain parts of it?

Ott and Field³³ observed that quiet peristalsis in the cat became very active after the brain was sectioned posterior to the thalamus. Similar observations were made by Bechterew⁵. He often noted that defecation occurred soon after the section was made. In decerebrate, vagotomized cats with the intestines floated in normal saline, Lurje²⁶ noted spontaneous contractions of the large intestine over a distance of 5 or 6 cm. The contraction was often of such intensity that the intestine was contracted down like a cord, snow-white due to squeezing out all of the blood. After beginning, the activity often lasted 20 minutes or more. Since the vagus nerve does not innervate the large intestines, certainly not the transverse and descending colons, the results may be considered in the light of the section of the brain.

Pal and Berggrun³⁴ approached the problem in another manner. They stimulated the right vagus nerve 15 seconds and excited contraction of the pyloric region of the stomach, but no movement of the small intestine. Stimulation of the left vagus gave a similar result. Then they made a section through the medulla and stimulated again.

- | | |
|-------|---|
| 11 02 | Complete section of the medulla oblongata |
| 11 10 | Stimulation of R. vagus 10 seconds—with contraction of the stomach there was also a slight contraction of the small intestine |
| 11 12 | Stimulation of L. vagus 10 seconds—definite intestinal peristalsis |
| 11 16 | Stimulation of R. vagus 10 seconds—active intestinal peristalsis |
| 11 35 | Stimulation of L. vagus 10 seconds—vigorous intestinal peristalsis |
| 11 48 | Stimulation of R. vagus 10 seconds—definite intestinal peristalsis |

The table giving the time and result of vagus stimulation makes it evident that the most marked activity appeared 14 and 33 minutes after the operative procedure. This point will be referred to later.

In subsequent experiments Pal and Berggrun³⁴ made more cephalad sections of the brain, stimulating the vagus nerves before and after the section, and observing the effect on intestinal peristalsis. In a series of dogs they made sections of the brain stem in the middle of the thalamus, in another series they made sections anterior to the thalamus immediately behind the head of the caudate nucleus, and finally in one group they extirpated both sigmoid gyri. In every group, vagal stimulation had little effect on intestinal motility before section of the brain, and in every group after section of the brain, vagal stimulation excited lively peristalsis in the small intestine. Often when first observed the intestines were narrow and pale or cyanotic. Following section of the brain the intestines appeared relaxed and redder in color.

One would conclude from the observations of Ott and Field³³, Bechterew⁵, Lurje²⁶, Pal and

Berggrun³⁴ and our own extirpation experiments that certain parts of the cerebral cortex, i.e., sigmoid gyrus and its neighborhood in the dog and cat, and the premotor area and its neighborhood in the monkey, normally exert an inhibitory influence upon intestinal motility. When the influence of the cortex is removed by extirpation, a release of function occurs, allowing excessive and perhaps abnormal intestinal motility.

Release of function raises the question of irritation. The observation of Bechterew⁵ that defecation occurred soon after the brain stem was sectioned behind the thalamus, might be accounted for on the basis of irritation. It is very unlikely, however, that irritation from the section played any part in exciting intestinal peristalsis in the vagus stimulation experiments of Pal and Berggrun. 33 minutes after the operative procedure Sherrington's work on decerebrate rigidity³⁰ and spinal transection indicates, moreover, that irritation from a transection of cord or cerebral substance rarely lasts for more than 10 minutes. Ruch and Watts³⁸, in demonstrating the release of function in the forelimb extensor muscles following postbrachial spinal transection, find that similar signs of irritation disappear within 10 minutes after the lesions were made. Evidences of irritation after injury to peripheral nerves may be somewhat more prolonged, but not longer than an hour⁴.

3 *Intussusception from local stimulation*
Nothnagel²⁸ has shown that by placing a crystal of sodium chloride on the peritoneal surface of the intestine contraction occurs above the point of irritation, whereas complete rest prevails below. Nothnagel²⁹ also demonstrated that it is possible to produce artificial invagination of the bowel in living rabbits by the application of faradic current to the intestinal wall. Cannon¹² states that "the modern conception of intestinal peristalsis was, however, not fully stated until Mall²⁷ pointed out the significance of Nothnagel's observation on intussusception. Nothnagel had reported that the *intussusciptens* portion of the gut, lying below the point of stimulation, folds back, and extends upward over the contracted *intussusceptum* lying above. Thus contraction above and relaxation below seemed so related as to be parts of a single act. And Mall concluded that while a mass in the intestine is causing contraction above, which forces the mass downward and thus stimulates fresh regions above to contract, active dilatation below is at the same time inviting an easy descent. Peristalsis would thus be another example of the mutual adjustment of antagonistic muscles toward efficient action—an example which presents in the neuromusculature of the gut the important principles named by Sherrington—'reciprocal' innervation."

When the premotor area and adjacent parts of the cerebral cortex are stimulated or excited, this local reciprocal innervation appears to be disturbed. In a group of the animals the resulting imbalance was sufficient to excite the production of an intussusception.

4 *Relation of skeletal movement to gut movements* Since the induced activity of the intestines in our experiments was usually associated with slow rhythmic movements of the extremities (from premotor stimulation) the question arises whether the increased intestinal movements have any relation to the movements of the skeletal muscle. It seems improbable that contraction of skeletal muscles could be a primary stimulus since faradization of area 4 caused vigorous movements of the contralateral extremities, but was without effect on the intestines. Also stimulation of the postcentral gyrus and the frontal region anterior to area 4 produced increased motor activity of the intestines but no activity of the extremities.

In several experiments when the depth of anesthesia became light, struggling movements occurred as ether was renewed and this was associated with marked augmentation of intestinal activity similar to that seen in response to stimulation of area 6. As the depth of anesthesia increased, all intestinal movements decreased.

5 *Pathways involved* The pathways by which impulses travel from the cerebral cortex to the intestinal musculature have not been adequately studied. They are clearly extrapyramidal paths because stimulation of area 4 failed to elicit activity in the intestines. Poliak³⁷ has shown that there are tracts from the frontal and precentral cortex to the red nucleus and substantia nigra, possibly there are tracts also to the hypothalamus. In the hands of Beattie² stimulation of the lateral margin of the infundibulum in cats excited marked increased peristalsis and secretion in the stomach provided barbiturates were not used as anesthetics (See also Sheehan and Beattie^{38a}). The usual effects of hypothalamic stimulation similarly could not be elicited in man under avertin anesthesia (Cushing³⁴), and in monkeys under "Dial-Ciba" anesthesia we have been unable to evoke motor responses of the intestine. The failure to obtain responses in animals anesthetized with barbituric acid derivatives is probably attributable to the site of action of the anesthetic, for E and J Keeser²⁰ have shown that the majority of barbituric acid derivatives act primarily upon the hypothalamic and thalamic nuclei.

Although the results in our experiments of cortical stimulation after vagotomy do not admit a definite interpretation it would appear that most excitatory impulses to the small intestine reach it through the vagus, but some also may

reach the small intestine by way of the spinal cord and then by preganglionic fibers of the sympathetic system. Intussusception was never produced in vagotomized animals nor were we able to detect alteration of gastric secretion in such animals.

The clinical implications of these studies, particularly in reference to morbid hunger and the gastrointestinal manifestations of focal and generalized epilepsy will be deferred to a future communication.

SUMMARY

The relation of the cerebral cortex to the motility of the gastrointestinal tract has been studied in a series of monkeys (*Macaca mulatta*) which prior to stimulation of the cortex, had had lesions made in various parts of the cerebral hemispheres. The gastrointestinal tracts of 65 unstimulated or unoperated monkeys were carefully studied as controls. The chief observations and conclusions are as follows:

1 Intussusception with fatal obstruction occurred spontaneously in three healthy monkeys in which the region of the premotor area (area 6) of the cortex had been removed from both hemispheres. Prior to this experience spontaneous intussusception has been encountered only twice in the course of 300 autopsies on monkeys carried out in the laboratory during the past three years, in both instances in acutely ill unoperated monkeys (probably agonal).

2 Carefully controlled faradic stimulation of the monkey's cortex in the premotor region gives rise to active peristaltic movements of the gut, and in 2 experiments with continuous stimulation (1 to 2 minutes) well-marked multiple intussusceptions were produced by this procedure. In three instances stimuli were applied intermittently over a period of several hours (Experiments 11, 12 and 13) and multiple intussusceptions were found on opening the abdomen.

3 Stimulation, brief and prolonged, of the motor area (area 4), which gives rise to vigorous movements of the skeletal musculature, failed to influence the movements of the gut.

4 Stimulation of the premotor area from certain points relaxed the stomach sphincters.

5 Intussusception could never be obtained after the vagi had been sectioned but stimulation of the premotor region in such preparations occasionally caused slight increase in peristaltic movements (the influence of the integrity of the sympathetic pathways was not studied).

6 In some experiments cortical stimulation caused increased secretions of the gastric juice.

7 In one instance (Experiment 10) stimulation of the frontal and postcentral convolution in a monkey from which the premotor area had been removed 5 months before caused increase in peristaltic movements, but not intussusception.

8 It is concluded that the cerebral cortex of monkeys contains autonomic representation for the gastrointestinal tract which is largely restricted anatomically to the premotor area, and that this representation includes both excitatory and inhibitory components

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OBSERVATIONS ON THE CHEMICAL AND PHYSICAL RELATION BETWEEN BLOOD SERUM AND BODY FLUIDS*

II The Chemical Relation Between Serum and Edema Fluids As Compared With That Between Serum and Cerebrospinal Fluid

BY D. ROURKE GILLIGAN, M.S., ‡ MARIE C. VOLK, A.B., ‡ AND HERRMAN L. BLUMGART, M.D. ‡

WHETHER cerebrospinal fluid is a dialysate in equilibrium with blood plasma has been

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This investigation was aided by a grant from the Proctor Fund of Harvard University

†In the literature the term dialysate has been used interchangeably with the term ultrafiltrate in reference to cerebrospinal fluid. The term dialysate has been employed in this communication to comply with the most current usage. This assumption is made that the composition of a plasma ultrafiltrate formed under physiological conditions would be the same or approach closely that of a dialysate at equilibrium (Greenberg D M and Greenberg M. J Biol Chem 94 373 1931)

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the subject of many investigations since 1912, when Mestrezat¹ first introduced this theory. It is generally held by the proponents of the dialysate theory of cerebrospinal fluid that the chemical composition of such fluid, so far as the major constituents are concerned, is that which would be expected from a simple membrane equilibrium. It seemed that a comparison of the distribution of substances between serum and edema fluids, which we have shown to be simple dialysates in a previous communication², with the reported distribution of substances between serum and cerebrospinal fluid would offer

a basis for testing the validity of the dialysate theory of cerebrospinal fluid

The approximate equality of osmotic pressure as measured by the freezing point of depression of serum and normal cerebrospinal fluid³ is in harmony with the dialysate theory. Since the osmotic pressures of secretions, such as gastric juice⁴ and hepatic bile⁵, are likewise approximately equal to the osmotic pressure of serum the proof of the dialysate nature of cerebrospinal fluid must rest on the conformity of the distribution of the individual substances between serum and cerebrospinal fluid to the distribution demanded by the physicochemical laws of dialysates

The chemical complexity of the serum does not allow an abstract definition of the true chemical state of all of its constituents. Thus, a measure of the total concentration of a given constituent of the plasma may not necessarily represent the amount which will be distributed across a semi-permeable membrane in accordance with the Donnan law of equilibrium. For example, it is well known that the calcium of the plasma consists of both diffusible and non-diffusible forms. The distribution of the total calcium between serum and its dialysates, therefore cannot be interpreted in terms of equilibrium laws alone.

Dialysis experiments between blood plasma and body fluids performed "in vitro" with artificial membranes are open to the criticism that physiological conditions are not reproduced. The proof of the dialysate nature of cerebrospinal fluid must then be based on the conformity of the distribution of substances between serum and cerebrospinal fluid with the distribution of the same substances between serum and other body fluids which can safely be considered dialysates on both a physiological and a physicochemical basis.

The data obtained in this laboratory² and the results of other investigators⁶⁻¹⁰ on the distribution of substances between edema fluids and serum leave no doubt that edema fluids from patients with congestive heart failure, nephritis, carcinomatous obstruction and cirrhosis of the liver are simple dialysates in equilibrium with blood plasma.

It must be considered whether the distribution of substances between serum and edema fluids differs fundamentally from the distribution between serum and normal interstitial fluids. The studies of Heim¹¹ and of Arnold and Mendel¹² on the distribution of certain substances between the serum and lymph of the normal dog indicate that the same laws which characterize the equilibrium between serum and edema fluids also characterize the equilibrium between serum and lymph. When the average values reported by Heim¹¹ are calculated in terms of the water content of the serum and lymph the ratios of the concentrations of chloride, calcium, inorganic phosphate and certain

non-electrolytes in serum and lymph are closely in accord with the ratios of the concentrations of the same substances in serum and edema fluids with similar concentrations of protein². It is clear, therefore, that edema may be considered as primarily a quantitative rather than a qualitative abnormality.

The possibility that one living body membrane may differ in permeability from another living body membrane must also be considered in this analysis. Further, the composition of

TABLE 1

AVERAGE CONCENTRATION RATIOS FOR SUBSTANCES IN SERUM AND EDEMA FLUIDS AND IN SERUM AND CEREbroSPINAL FLUID*

Substance	Ratio†	Ratio for Edema Fluids	Ratio for Cerebrospinal Fluid
Total N P N	Fluid Serum	0.98	0.6
Creatinine	Fluid Serum	0.97	0.8
Sugar	Fluid Serum	1.06	0.6
Chloride	Serum Fluid	0.98	0.87
Bicarbonate	Serum Fluid	1.01‡	1.18
Inorganic Phosphate	Serum Fluid	1.03	2.6
Sodium	Fluid Serum	0.96	0.96
Calcium	Fluid Serum	0.70	0.5
	Calculated Donnan Ratio	0.955	0.94

*Average protein concentration of edema fluids—1.4 Gm. per cent. Cerebrospinal fluid protein values average approximately 0.93 per cent.

†Data for edema fluids taken from paper I of this series (Ref. 2). Values for cerebrospinal fluids calculated from data of the sources indicated in the discussion.

‡Venous blood bicarbonate alone considered in order to compare with venous blood used in studies on cerebrospinal fluid. Mean value for ratio representative of blood midway between arterial and venous is 0.96.

ventricular fluid as well as lumbar fluid must be utilized, since the concentration of some substances in the cerebrospinal fluid varies at different levels¹³. Although the protein concentration of normal cerebrospinal fluid is somewhat less than that of even those edema fluids which contain the smallest amounts of protein, comparison of the chemical composition of edema and cerebrospinal fluid may be made,

since the effect of protein concentration can be estimated from the physicochemical laws of dialysates

The relative distribution of various substances between cerebrospinal fluid and serum and between edema fluids and serum is discussed under separate headings below. This analysis is based on the extensive data which have been reported by other investigators for the distribution of electrolytes and non-electrolytes between serum

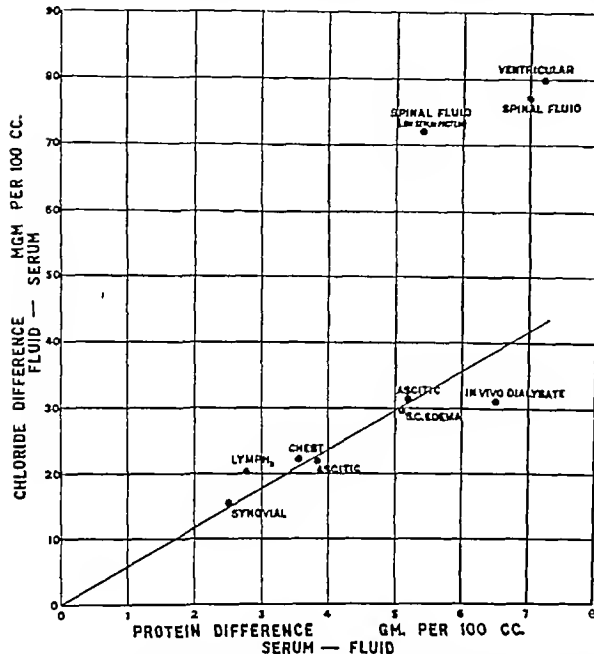


FIGURE 1 The relationship between the average differences in the chloride concentrations of certain body fluids and serum (fluid chloride-serum chloride) and the average differences in protein concentration (serum protein fluid protein). The values charted represent the average values in mg. per 100 cc. for the difference in chloride and protein concentration as taken from the literature in the following manner: chest fluid total of twelve observations from our studies³ from data of Loeb⁴ and from Greene⁵; ascitic fluid dogs ten studies by Greene⁶; subcutaneous edema fluid, total of fourteen observations from our studies³; Gollwitzer Meier⁷ and Hastings⁸; cerebrospinal fluid total of 29 observations from Fremont Smith⁹ and Hamilton¹⁰; cerebrospinal fluid with serum proteins averaging 5.5 Gm per 100 cc. six studies from Fremont Smith⁹; lateral ventricle fluids seven studies from Fremont Smith⁹; in vivo dialysates in dogs fifteen studies from Greene¹¹; lymph dogs total of eleven six cervical lymph from Helm¹² and one thoracic duct lymph from Arnold¹³.

and cerebrospinal fluid, on our own data presented previously² and on the data of others for the distribution of substances between serum and edema fluids. Table 1 gives a brief summary of data to be discussed.

CHLORIDE

According to physicochemical laws the concentration of chloride in a dialysate in equilibrium with serum should be greater than the chloride concentration of the serum. It has been established by many investigators that the chloride concentration of cerebrospinal fluid, whether ventricular or lumbar^{13, 14}, is considerably higher than that of the serum of the same patient. The chloride concentrations of various

edema fluids^{2, 6, 7, 8, 9, 10}, of lymph^{11, 12}, of synovial* fluids and of the "in vivo"[†] dialysates of Greene¹⁵ are also higher than those of the sera.

In figure 1 the average excess of chloride in these fluids as compared with the serum (fluid chloride-serum chloride), has been plotted against the average excess of protein in the serum as compared with the fluids (serum protein-fluid protein). It will be noted that the excess of chloride in edema fluids, lymph, synovial fluids, and the "in vivo" dialysate is proportional to the excess of protein in the serum. In contrast, the excess of chloride in cerebrospinal and ventricular fluids is much greater in relation to the serum protein excess than is the case in the simple dialysates. For example, the edema fluid chloride averages approximately 32 mg per 100 cc. higher than the serum chloride, whereas the spinal fluid chloride averages 72 mg higher than the serum chloride when the difference in protein concentrations of the two fluids is 5.4 Gm per 100 cc. (figure 1).

In one instance measurements were made of the chloride concentrations of serum, subcutaneous edema fluid, chest fluid, ascitic fluid and cerebrospinal fluid from a patient with congestive heart failure who had fasted for four teen hours (table 2). The chloride was meas

TABLE 2
RELATIONSHIP BETWEEN CONCENTRATIONS OF CHLORIDE AND PROTEIN IN VARIOUS BODY FLUIDS OF A PATIENT WITH CONGESTIVE FAILURE

	Protein		Excess Chloride	
	Chloride		Protein	
	Gm per 100 cc.	Mgm per 100 cc.	In Serum (Serum Fluid)	In Fluid (Fluid Serum)
Serum	5.1	364		
Ascitic Fluid	0.9	387	4.2	23
Chest Fluid	0.7	389	4.4	25
Subcutaneous Edema Fluid	0.4	392	4.7	28
Cerebrospinal Fluid	0.02	436	5.1	72

ured by the method of Wilson and Ball¹⁶ and the protein by the method of Dyer¹⁷. The results obtained in this instance are similar to those found by employing average values as in figure 1. The excess of chloride in the cerebrospinal fluid (table 2) is strikingly higher, in respect to the serum chloride, than that found

*Synovial fluid has been included here since data accumulated by Dr. Walter Bauer (personal communication) suggest that this fluid is essentially a dialysate.
†These in vivo dialysates were obtained by Greene and Power¹⁵ through an ingenious method whereby an ultrafiltrate of serum was secured through an artificial membrane interposed in the arterial path of the blood stream of dogs.

in the different edema fluids. Although the cerebrospinal fluid contained only 0.4 Gm. per cent less protein than the subcutaneous edema fluid, it contained 44 mg per cent more chloride (table 2). In contrast, the subcutaneous edema fluid contained only 5 mg per cent more chloride than the ascitic fluid, with a protein concentration 0.5 Gm. lower.

The observed ratio* describing the distribution of chloride between serum and certain body fluids, the excess of protein in the serum, and the distribution ratios calculated according to Van Slyke, Wu and McLean¹³ to conform to the Donnan equilibrium equation are given in table 3. The values for the distribution of chloride between serum and cerebrospinal fluid reported by Muntwyler and his associates¹⁰ and by Fre-

in the case of edema fluids and lymph would make the concentration of chloride in the "free" water of the serum higher than the concentration of chloride in these dialysates, a finding quite contrary to the Gibbs-Donnan law.

It has been noted, by comparison of average values, that the cerebrospinal fluid chloride diminishes as the protein of the serum diminishes^{13, 24}. This relationship is evident in figure 1, where the cerebrospinal fluid chloride excess is less for the series with low serum proteins than for the series with higher serum proteins. A diminishing cerebrospinal fluid chloride excess with a diminishing serum protein excess is in accord with the findings for dialysates. However, the chloride excess in the cerebrospinal fluid from patients with low plasma pro-

TABLE 3

COMPARISON OF THE CHLORIDE DISTRIBUTION RATIOS FOUND WITH THE CALCULATED DONNAN RATIOS FOR VARIOUS BODY FLUIDS

Chloride Distribution	Author	Protein Difference (Serum Fluid)	Ratio Found	Theoretical Ratio
Venous Serum	Muntwyler ¹⁰	6.4	0.86	0.94
Spinal Fluid				
Venous Serum	Fremont Smith ¹²	7.0*	0.88	0.93
Spinal Fluid				
Venous Serum (Dogs)	Greene ⁷	5.2	0.97	0.95†
Ascitic Fluid				
Venous Serum	Gilligan ³	5.0	0.98	0.96
Edema Fluids				
Venous Serum	Muntwyler ¹⁰	—	0.96	0.96
Ascitic Fluid				

*Serum protein value not given taken to be normal

†Value approximated by us from protein difference

discrepancy was obliterated¹⁹. However, this assumption seems invalid, since its introduction by Mont-Smith and Dailey¹² are considerably lower than the theoretical Donnan ratios (table 3). The ratios found by these authors are similar to those reported by others^{20, 21, 22, 23}. The observed chloride distribution ratios obtained for edema fluids (table 2) agree much more closely with the theoretical Donnan ratios, being the same as or slightly higher than the theoretical ratios.

As an explanation for the discrepancy between the observed and the theoretical ratios describing the distribution of chloride between serum and cerebrospinal fluid it has been pointed out¹⁰ that a considerable amount of the plasma water may be bound to the protein or other colloids of the plasma. By assuming a value of 4.3 cc of water per 100 cc of plasma so bound, the

In each instance the ratios express values calculated in relation to the water content of the serum and fluids.

teins is still much too great to comply with the excess of chloride found in edema fluids drawn from patients with low plasma proteins (figure 1). Further, an analysis of data in the literature^{21, 22, 23} on the distribution of chloride and protein between cerebrospinal fluid and serum shows that the variations in individual instances from the average value for the cerebrospinal fluid chloride excess for a given serum protein are very great. It is not uncommon to find differences in the chloride excess of normal cerebrospinal fluids of as much as 20 mg per 100 cc in different patients with the same serum protein concentration, whereas an excess of chloride of this magnitude should on the basis of edema fluid studies, correspond to a serum protein difference of some 4 or 5 Gm per cent.

The cerebrospinal fluid chloride concentration and the serum chloride concentration are reduced in meningitis^{13, 20}. The total osmotic pres-

sue of the serum and cerebrospinal fluid, as measured by the freezing-point depression, are also reduced in meningitis³. The relative reductions of the spinal fluid chloride are at times greater than the reduction of the serum chloride so that the distribution ratio

(Cl) serum

(Cl) spinal fluid

may become more like that found in the case of edema fluids²⁰

Stary, Kial and Winternitz²⁰ and Kral, Stary and Winternitz²¹ found that the chloride concentration of the cerebrospinal fluid diminishes when the serum and cerebrospinal fluid of a patient are dialyzed against one another through a collodion membrane. After dialyzing, the difference between the chloride concentration of the serum and cerebrospinal fluid becomes approximately that found between serum and low protein edema fluids. As early as 1921 Mestiezat²⁰ showed that the chloride concentration of an artificial dialysate is less in respect to the serum chloride than the chloride concentration of cerebrospinal fluid.

Since physiological conditions are not reproducible outside the body, the fact that "in vitro" dialysates of serum from a given patient contain less chloride than the cerebrospinal fluid from the same patient has not, in the past, been considered important evidence against the dialysate nature of cerebrospinal fluid. However, comparative analyses made on the basis of the physiological equilibrium found between serum and edema fluids also lead one to the conclusion that the chloride concentration of cerebrospinal fluid is too high in respect to the serum chloride to accord with the dialysate theory of the nature of cerebrospinal fluid.

BICARBONATE

Hamilton¹ and Muntwyler¹⁰, employing venous sera, and Linder and Carmichael²⁷, employing arterial sera, found that the average bicarbonate concentration of the cerebrospinal fluid is lower than the average bicarbonate concentration of the serum. According to the physicochemical laws of equilibrium, the bicarbonate concentration of a dialysate should be greater than that of the serum representative of equilibrium conditions. Muntwyler¹⁰ found an average ratio

(HCO₃) venous serum

(HCO₃) spinal fluid

of 1.18 as compared with an average ratio

(Cl) venous serum

(Cl) spinal fluid

of 0.86 and a calculated Donnan ratio of 0.94 for the same series

The studies in the foregoing paper² on the distribution of bicarbonate between serum and edema fluids show that the average bicarbonate concentration of edema fluids is greater than that of arterial blood and usually slightly less than that of venous blood. The average ratio

(HCO₃) arterial serum

(HCO₃) edema fluids

was 0.91, the average ratio

(HCO₃) venous serum

(HCO₃) edema fluids

was 1.01, and the ratio of serum of a bicarbonate composition midway between that of arterial and that of venous blood to edema fluids was 0.96 in a series where the average calculated Donnan ratio was 0.955. The value for the average bicarbonate ratio when venous serum was employed agrees with the ratios found by other investigators^{7, 8, 10}. A consideration of the ratios found when both arterial and venous sera were employed indicates that HCO₃ is distributed between serum and edema fluids according to Donnan's law².

Greene and Power¹⁵ obtained an average ratio

(HCO₃) serum

(HCO₃) dialysate

of 0.966 in their "in vivo" dialysate experiments, where the theoretical Donnan ratio was 0.933 and the blood sample representative of equilibrium conditions was known.

Muntwyler¹⁰ suggested that the bicarbonate ratio for spinal fluid might accord more closely with the theoretical Donnan ratio if arterial rather than venous serum were compared with spinal fluid. When the results of Muntwyler¹⁰ are estimated in terms of arterial serum, the bicarbonate concentration of the arterial serum is still considerably higher than the bicarbonate concentration of the cerebrospinal fluid. Further, Linder and Carmichael²⁷ found, on analysis of arterial serum and cerebrospinal fluid in patients with nephritic acidosis, that the bicarbonate concentration of arterial serum is considerably higher than that of spinal fluid.

These studies on the distribution of bicarbonate between serum and cerebrospinal fluid indicate that, unlike edema fluids, the bicarbonate concentration of cerebrospinal fluid is too low to accord with the distribution expected for a dialysate in equilibrium with plasma. The low cerebrospinal fluid bicarbonate concentration cannot be explained by assuming that bicarbonate is bound in the serum, since our data on the distribution of bicarbonate between serum and edema fluids² and the findings of Greene and Power¹⁵ indicate that the bicarbonate of the serum is freely diffusible.

INORGANIC PHOSPHATE

The inorganic phosphate concentration of normal cerebrospinal fluid is approximately 60 per cent less than the inorganic phosphate concentration of the serum^{20, 23, 25}. The cerebrospinal fluid phosphate increases proportionately with the serum phosphate increase in nephritis, so that the ratio of the concentrations remains approximately the same as normally²⁹. On the other hand, the cerebrospinal fluid phosphate is not increased when the serum phosphate is increased in idiopathic hypoparathyroidism³⁰ and is not decreased when the serum phosphate is decreased following the administration of parathyroid extract³¹. In meningitis the cerebrospinal fluid phosphate may increase so that the ratio of cerebrospinal fluid to serum phosphate is increased considerably above the normal value²³.

The phosphate concentration of edema fluids^{2, 31}, and of lymph¹¹ on the other hand is approximately the same as the serum phosphate concentration. In our studies² the average ratio of serum phosphate to edema fluid phosphate, calculated on the basis of water contents of the serum and fluids, was 1.03. In Heim's studies¹² the average ratio of the plasma to lymph phosphate was 0.98.

Walker³², Pincus and his associates³³ and Ellsworth³⁴ employing ultrafiltration through artificial membranes likewise found the phosphate concentration of serum and ultrafiltrate to be practically the same. Strydom and his associates²⁰ observed that when cerebrospinal fluid is dialyzed against serum the cerebrospinal fluid phosphate increases, the concentration in the serum and cerebrospinal fluid being approximately equal at equilibrium.

Walker³² recently observed that the concentration of inorganic phosphate in the cerebrospinal fluid and the aqueous humor of frogs is only 40 per cent of the concentration in the plasma whereas the inorganic phosphate concentration of the frog lymph drawn from peripheral channels is approximately the same as that of the plasma. The inorganic phosphate concentration of glomerular urine is likewise approximately the same as that of plasma³⁵.

The fact that the normal cerebrospinal fluid inorganic phosphate concentration is only 40 per cent of that of the serum, whereas the inorganic phosphate concentrations of "in vitro" and "in vivo" dialysates and ultrafiltrates are approximately equal to that of the serum speaks against the dialysate theory of cerebrospinal fluid.

The discrepancy in the phosphate values which have been found between cerebrospinal fluid and "in vitro" ultrafiltrates has been interpreted by Cantarow²⁹ as due to a distinct difference between the diffusibility of artificial

and of living membranes. This interpretation becomes untenable in the light of the equal distribution of phosphate found between serum and edema fluids lymph and glomerular urine. Further, to ascribe the low phosphate concentration of cerebrospinal fluid to a selective membrane permeability, as differing from the permeability of other living membranes seems untenable, especially in the light of the constancy of the cerebrospinal fluid inorganic phosphate concentration at different levels of the plasma phosphate concentration in hypo- and hyperparathyroidism.

SODIUM

In a large series of carefully controlled studies Fremont-Smith and Dailey¹⁹, and Dailey³⁶ have shown that the concentration of sodium in the water of the cerebrospinal fluid is lower than the concentration of sodium in the water of the serum. Dailey³⁶ found that changes in the serum sodium concentration were reflected by changes in the cerebrospinal sodium concentration, and that the ratio of spinal fluid sodium to serum sodium tended to be constant.

Fremont-Smith and Dailey¹⁹ found an average observed ratio

(Na) spinal fluid

(Na) serum

of 0.96 as against an average calculated ratio of 0.93 in twenty-five cases in which the cerebrospinal fluid was essentially normal in composition. Using the same analytical method as is used by these authors we found the average distribution ratio of sodium between edema fluids and serum to be 0.96² as against a calculated ratio of 0.955. Greene and his associates³ also found an average ratio

(Na) edema fluids

(Na) serum

of 0.96 in a series for which the theoretical ratio was approximately 0.97.

From these data it would appear that the agreement is closer between the observed and calculated sodium ratios for edema fluids than for cerebrospinal fluid. The differences between the observed and calculated ratios for cerebrospinal fluid are not great however. Fremont-Smith and Dailey¹⁹ pointed out that if one assumes that approximately 1 per cent of the plasma water is "bound," this difference for cerebrospinal fluid can be eradicated. For the reasons mentioned previously, this assumption seems invalid.

CALCIUM

The calcium concentrations of normal cerebrospinal fluid and of edema fluid are considerably less than the calcium concentration of serum.

The large excess of serum calcium over edema fluid calcium is ascribed to the affinity of protein for this ion, a calcium-protein combination resulting, which is non-diffusible both through capillary and collodion membranes.

The calcium concentration of normal cerebrospinal fluid averages approximately 50 per cent of the normal serum calcium concentration^{22 25 28 37}. A large number of the reported serum ultrafiltration and dialysis experiments performed "in vitro", and the "in vivo" dialysate studies of Greene¹⁵ give values for the diffusible calcium which are somewhat higher than the cerebrospinal fluid calcium values. Likewise, the calcium concentrations of low protein edema fluids^{2 7 8} indicate that approximately 70 per cent of the serum calcium is diffusible.

In meningitis the cerebrospinal fluid calcium is often increased above the normal²⁸. As was pointed out by Merritt and Bauer²⁸ the increase in the cerebrospinal fluid protein concentration in certain meningitis cases may account satisfactorily for the increase in the cerebrospinal fluid calcium concentration. In other cases the increases are not accounted for in this manner, and would, according to these authors, seem to be a result of the pathological changes in the meninges and choroid plexus.

Kral and his associates²⁵ showed in one experiment in which serum was dialyzed against cerebrospinal fluid that the calcium concentration of the cerebrospinal fluid increased from 48 per cent to 65 per cent of the serum calcium concentration.

It has been shown that the cerebrospinal fluid calcium does not increase appreciably when the serum calcium increases during parathormone administration^{31 38 39}. Further, the cerebrospinal fluid calcium does not decrease appreciably in parathyroid tetany when the serum calcium concentration is strikingly decreased³⁰. Albright and his associates³⁰ have reported studies on a patient with idiopathic hypoparathyroidism in whom the serum and cerebrospinal fluid calcium concentrations were identical, each being 4.5 mg per 100 cc.

In contrast to these findings, the calcium concentrations of edema fluids of low protein concentration³¹ and of lymph¹² show practically the same increase as the calcium concentration of serum during parathormone administration. Arnold and Mendel¹² have further shown that the lymph calcium is decreased as is the serum calcium after parathyroidectomy. These results lead one to conclude that the administration of parathormone causes an increase in the physiologically diffusible calcium fraction of the serum³¹. This conclusion is directly opposite to the conclusion to which one is led if one accepts cerebrospinal fluid as a representative physiological dialysate^{38 39}. Peters⁴⁰ likewise concludes that the logical inference from these

conflicting results^{12 38 39} would be that spinal fluid is not a simple dialysate. He states that if cerebrospinal fluid were to be considered a dialysate the only alternative would be that lymph is not a dialysate, a conclusion against which there is an overwhelming body of evidence.

MAGNESIUM

According to Barrio⁴¹, and to Stary Kral and Winternitz⁴², the magnesium concentration of cerebrospinal fluid averages approximately 40 per cent higher than the magnesium concentration of serum from the same patient. In contrast, Greene and his associate¹⁵ found that the magnesium concentration of the "in vivo" dialysate was lower than that of the serum. Likewise, Greene and his associates⁷ found that the magnesium concentration was lower in transudates than in the corresponding sera. The values for the distribution ratios found by these authors^{15 7} indicate that the serum magnesium concentration is higher than that of the dialysates and transudates partly by virtue of the Donnan laws of distribution and partly because of a bound magnesium compound in the serum, comparable to a bound calcium compound.

Stary, Kral and Winternitz⁴² further found that when cerebrospinal fluid was dialyzed against serum from the same patient, the magnesium concentration of the cerebrospinal fluid became lower than that of the serum. The same analytical method was used for the cerebrospinal fluid before dialyzing and for the dialyzed cerebrospinal fluid.

Whereas according to physicochemical laws and to the values found for edema fluids⁷, the concentration of magnesium should be lower in plasma dialysates than in the plasma, the concentration of magnesium in cerebrospinal fluid is, according to the above-mentioned investigators^{41 42}, higher than the concentration in the plasma.

NON-PROTEIN NITROGEN CONSTITUENTS

The total non-protein nitrogen concentration in cerebrospinal fluid is approximately 60 per cent of the concentration in the serum^{23 43}. In contrast, the total non-protein nitrogen concentrations of edema fluids² and of lymph¹¹ are, when calculated on the basis of water content, approximately equal to the concentrations in the sera. This latter relationship accords with the dialysate nature of edema fluids and lymph, and indicates that the membranes separating these fluids from the plasma are permeable to all of the plasma non-protein nitrogen constituents. Approximately equal creatinine distribution between serum and edema fluids² and approximately equal distribution of urea between serum and lymph¹¹ have been demonstrated.

The low values obtained for the total non-protein nitrogen constituents of spinal fluid are apparently the resultant of the almost complete absence of uric acid^{43 44} and the low values for creatinine^{43 44} and for amino acids⁴⁵. The values reported for the distribution of urea between cerebrospinal fluid and plasma are conflicting^{44 46 47} probably due to the utilization of incorrect analytical methods in certain instances. The results of Galan and Houssay⁴⁷ however, demonstrate practically equal concentrations of urea in blood, spinal fluid, lymph, pancreatic juice and bile in the dog. Cahane and Henrich⁴⁸ have also shown in a recent study of a large series of cases that the cerebrospinal fluid and serum urea concentrations are usually similar.

The above similarities and differences in the distribution of the various non-protein nitrogen constituents of body fluid dialysates (edema fluids and lymph) and serum, and cerebrospinal fluid and serum, do not offer convincing proof either of the dialysate or of the non-dialysate theory of the nature of cerebrospinal fluid. The almost complete absence of uric acid and the low concentrations of creatinine and amino acids might conceivably be attributed to a selective permeability of the membrane separating the cerebrospinal fluid from the plasma. This seems improbable, however, especially in the case of the amino acids. The similarity in the concentration of urea in the cerebrospinal fluid and serum does not necessarily favor the dialysate theory, since urea is likewise distributed practically equally between pancreatic juice and serum, and bile and serum.⁴⁹

SUGAR

Under fasting conditions, cerebrospinal fluid normally contains approximately 60 per cent of the total reducing substances of the serum. Fremont-Smith and his associates²³ found in 22 adult patients that the normal cerebrospinal fluid sugar varied from 49 per cent to 81 per cent of the blood sugar and Stewart¹⁴ found variations from 42 per cent to 82 per cent in thirty normal infants and children. The cerebrospinal fluid sugar is increased when the blood sugar is increased after a meal⁴⁸ and in diabetes⁴⁹, and decreased after insulin.⁵⁰

Ventricular fluid contains, according to Stewart¹⁴, approximately 6 mg more sugar than lumbar fluid, and fluid from the cisterna magna contains on the average 1 mg more sugar than lumbar fluid, indicating that sugar is oxidized in the spinal canal.

By a comparison of data found by Somogyi's sugar method⁵¹ with that found by the Folin-Wu method⁵², Cohn, Levinson and McCarthy⁵³ conclude that the cerebrospinal fluid contains an average of 8 mg per 100 cc of non-glucose reducing substances. Using Somogyi's method Cohn further found that the cerebrospinal fluid

glucose concentration averaged 88 per cent of the whole blood glucose concentration. Transposing Cohn's figures to terms of concentration per unit of water content of cerebrospinal fluid and whole blood, the difference in the glucose concentration of the two fluids becomes much greater.

Equality of glucose concentration in lumbar or ventricular fluid and plasma has not, to our knowledge, been demonstrated.

The concentration of reducing substances in edema fluids, on the other hand, is the same or slightly greater than the concentration in the serum when the values are calculated on the basis of the water content.² Reasons were given in our previous communication for believing that in those cases where the edema fluid sugar was slightly higher than the serum sugar, true equilibrium was not obtained. Power and Greene⁵⁴ likewise found approximately the same concentration of total reducing substances in plasma and in the "in vivo" dialysate and concluded from their results that glucose is diffusible and that there is no evidence of a non-diffusible or colloidal bound form of sugar in the plasma. Equality of glucose concentration in serum and its dialysates must then be expected.

The apparent discrepancy in the distribution of sugar between plasma and cerebrospinal fluid has been explained, as pointed out by Walker³² on two bases: (1) a portion of the plasma sugar is in a form which is not filtrable through the membrane separating spinal fluid from plasma, and (2) a portion of the plasma sugar is utilized by the brain tissue before the fluids to be analyzed are collected.

Walker³² found that the cerebrospinal fluid and aqueous humor of the frog also contained on the average only 60 per cent of the sugar of the plasma, whereas the sugar of the web lymph and the glomerular urine³³ of the frog was approximately equal to that of the plasma. This author points out that since only 5 mg per 100 cc of a total of approximately 40 mg per 100 cc of reducing substances in frog plasma represent non-fermentable sugar, the cerebrospinal fluid of the frog contains considerably less fermentable sugar than the plasma. Walker³² further concludes, "The failure of cerebrospinal fluid sugar to approximate the plasma level after preliminary cisternal drainage (in the frog) argues against the sugar utilization hypothesis which is finally rendered untenable by the demonstration that this deficiency is maintained in depancreatized dogs, whose sugar utilization must be greatly diminished or abolished."

The distribution of sugar between cerebrospinal fluid and serum differs, therefore, from the distribution found between serum and body fluid dialysates or ultrafiltrates, such as edema fluids, lymph and glomerular urine. This apparent non-conformity of the cerebrospinal fluid

sugar distribution with that found for dialysates cannot be entirely explained on the bases of non-diffusibility of the plasma sugar or of modification of the cerebrospinal fluid sugar concentration by tissue oxidation subsequent to dialysis

DISCUSSION

The validity of the dialysate theory of the nature of cerebrospinal fluid has been tested by a comparative analysis of the reported distribution of substances between serum and cerebrospinal fluid and the distribution of the same substances between serum and edema fluids. It has been pointed out in the preceding communication that edema fluid is, beyond reasonable doubt, a simple dialysate in equilibrium with plasma. The comparison between the distribution of substances between serum and cerebrospinal fluid and serum and edema fluids has been amplified by reference to the results reported in the literature for the distribution of substances between serum and lymph and serum and artificial dialysates, as well as by repeated reference to the recognized physicochemical laws for dialysates.

The distribution of chloride, bicarbonate, inorganic phosphate, sodium, calcium, magnesium, non-protein nitrogen constituents and the reducing substances has been discussed. The other constituents of the plasma have not been taken up because there are not sufficient reliable data available on the distribution between serum and the body fluids in question. The results of the many investigators who have measured the relative serum and cerebrospinal fluid concentrations of the substances discussed are essentially in accord with one another.

This study has revealed that the distribution of many substances between serum and cerebrospinal fluid differs markedly from the distribution between serum and edema fluids, lymph and artificial dialysates. The corollary to this is that the distribution of substances between serum and cerebrospinal fluid differs markedly from the distribution demanded by the physicochemical laws of dialysates. It has been pointed out that erroneous conclusions concerning the physiological diffusibility of the constituents of the plasma have been drawn because cerebrospinal fluid has been considered a representative physiological dialysate.

Evidence, on the basis of chemical studies, that cerebrospinal fluid is neither a dialysate nor a simple ultrafiltrate has also been advanced recently by Stary and his associates⁴², by Peters⁴⁰, and by Walker⁴².

SUMMARY

1 The validity of the dialysate theory of the nature of cerebrospinal fluid has been tested by comparing the distribution, as reported in the literature, of substances between cerebro-

spinal fluid and serum with the distribution of the same substances between edema fluids and serum. This comparison has been strengthened by reference to the physicochemical laws of equilibrium and to the reported studies on lymph and artificial dialysates.

2 The distribution of chloride, bicarbonate, inorganic phosphate, calcium, magnesium, non-protein nitrogen constituents, and reducing substances between serum and cerebrospinal fluid differs importantly from the distribution of these same substances between serum and edema fluids. The distribution of sodium differs only slightly.

3 The factors which might explain these discrepancies in favor of the dialysate theory of cerebrospinal fluid have been considered and found inadequate.

4 It must be concluded that cerebrospinal fluid is not a dialysate or a simple ultrafiltrate.

5 The consideration of cerebrospinal fluid as a representative physiological dialysate or ultrafiltrate has led to erroneous conclusions concerning the general physiological diffusibility and chemical state of constituents of the plasma.

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FRANCE HONOURS RESEARCH

The President of the French Republic has paid a notable tribute to medical and chemical research by conferring the honour of La Croix de Chevalier de la Légion d'Honneur upon Sir Henry Wellcome LL.D., F.R.S the Founder of the Wellcome Research Institution and its associated research laboratories and museums in which are included The Bureau of Scientific Research Physiological Chemi-

cal and Entomological Research Laboratories and The Museum of Medical Science and The Historical Medical Museum.

Sir Henry Wellcome is a native of Wisconsin and was graduated at the Philadelphia College of Pharmacy. He is President of Burroughs Wellcome & Co (U S A.) Inc New York in whose research and experimental laboratories much original work has been done.

NEW ENGLAND BRANCH, AMERICAN UROLOGICAL ASSOCIATION

SOME DEPARTURES FROM THE BEATEN PATH IN KIDNEY SURGERY*

Experimental Studies

BY NELSE F. OCKERBLAD, M.D.†

AFTER watching the remarkable work of O. J. Dixon^{1, 2} in live muscle transplants in veins and in liver and spleen tissue, I begged his consent to extend this work to the field of kidney surgery and it is with his kind permission that I have been able to pursue these studies and present to you these findings. Not only are these studies and experiments intensely interesting but they are, I believe, capable of a very wide clinical application in human surgery. The use of freshly cut pieces of muscle as a hemostatic is not entirely new. The use of viable muscle grafts and implants is quite new so far as it has been extended to veins and arteries by Dixon and to kidney surgery by me.

Harold Neuhof³ in his monograph in 1923 said, "The free transplantation of striated muscle is not a method of established usefulness in surgery. Except for its hemostatic properties muscle as a transplant has proved of little clinical value. The first work to appear on the subject was a publication by Zielonko in 1874, who transplanted muscle tissue into the lymph sac of a frog and noted the rapid necrosis of the graft without any evidence of regeneration." Neuhof states that experimentally Laeven⁴ was the first to demonstrate that fresh muscle tissue could be successfully used for the control of oozing from parenchymatous organs. Laeven and Jurasz⁵ report two successful cases where wounds of the heart were sealed with a piece of fresh muscle tissue. Earlier than this, however, Harvey Cushing⁶ made use of bits of the temporal muscle freshly cut out and placed upon the oozing points in the exposed brain. He thought that his observation was entirely original but when he found that Sir Victor Horsley⁷, the noted English brain surgeon, had preceded him, he gave him credit in a footnote. Sir Victor had been using it for years but only published a short note upon the subject in 1914. The first and only known man other than Dixon to use viable muscle grafts was Harold Kisch⁸, who used the live muscle graft in a mastoid operation to control the oozing from the bone. Harvey Cushing's⁶ observations were unique and interesting. He found that in brain op-

erations the gauze tips or pledgets of cotton used to sponge adhered to the tissue and when removed the bleeding again started. Casting about for something to leave in the wound he tried cutting pieces of the temporal muscle and found that these would adhere very promptly and check further extravasation better than the gauze or cotton pledgets. He also found that by saving the blood clots that resulted from the hemorrhage after going through the scalp and skull, he could make use of these as a hemostatic. This interesting observation is quoted because of its bearing upon another equally interesting contribution of Eugen Joseph⁹ of Berlin, who published a valuable paper on the subject of muscle implantation in nephrotomy in 1931. Joseph freely states that he got his idea some years before from watching Harvey Cushing using the muscle tissue for hemostasis in brain operations and says that he set his Italian assistant Ciminata¹⁰ to work on the problem as it might relate to the kidney in dogs. Ciminata published his observations in 1924. This was the first work using muscle tissue to control bleeding in kidney operations, but it was all done on non-viable muscle. Ciminata used eighteen dogs in his experiments and in most instances the convex surface of the kidney was resected and in one instance the lower pole was resected. His method was to place the muscle tightly on the bleeding surface and suture it securely in place with fine catgut. About six sutures were taken to fasten the muscle in place. Of the 18 dogs, 13 died, one from peritonitis, three from shock, and nine from suppuration in the region of the kidney. From the five dogs which lived, the following data were compiled. In three days, the muscle tampon had a rough appearance, no bleeding. In six days the muscle tissue could not be seen. The parenchyma wound was covered with a grayish colored slough. In ten days there was a depression of a fibrillar appearing tissue. In 15 days healing was completed, in 20 days, a scarred depression, in 62 days only a superficial scar. The histological findings were interesting and he states that when necrosis of the muscle occurred there was an infiltration of the kidney parenchyma, of the kidney capsule, and of the fat capsule of the kidney. The kidney tissue showed an increase in the intertubular stroma, an enlargement of the uriniferous tubules to-

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Read before the New England Branch of the American Urological Association, at Boston, Massachusetts, October 19, 1933.

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gether with hyaline casts, and in a few places anemic necrosis. There was no evidence of regeneration of the muscle fibers. He concluded that if careful asepsis were practiced, it would be possible to secure rapid healing of the kidney after muscle transplant. On the basis of this work of Cimminata, Eugen Joseph⁹ applied

gut sutures. This he says will act as a tampon to prevent bleeding.

In 1917 a very important paper was published from the Laboratory of Surgical Research of the Harvard Medical School by Edward H. Risley¹¹ and although this paper long preceded Eugen Joseph's publication and Cimminata's con-

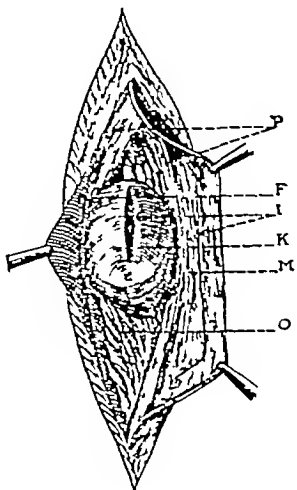


FIGURE I. Showing incision into the kidney ready to receive the muscle implant.

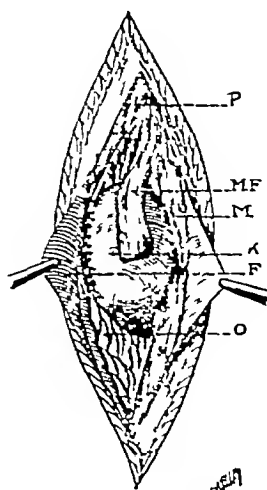


FIGURE II. Showing viable muscle graft pressed down into the wound, sealing it and controlling hemorrhage. No suture used.

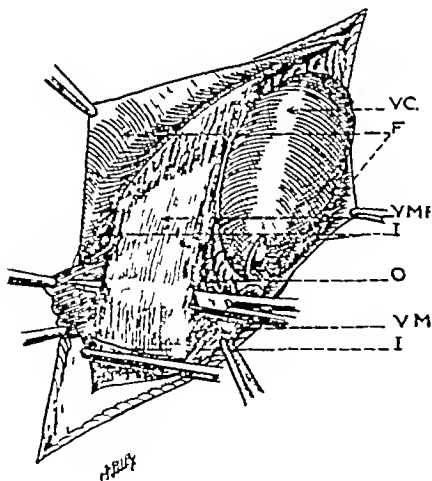


FIGURE III. Wedge-shaped piece resected from lower pole of kidney.

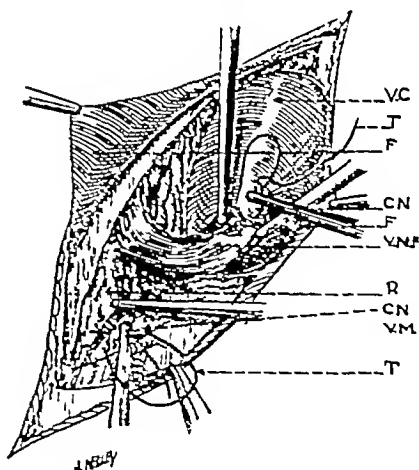


FIGURE IV. Viable muscle flap applied to the wound—one suture used to hold it in place.

it to operations upon the kidney in human beings, particularly in cases of nephrotomy for stones in solitary kidneys where there was danger of hemorrhage, and in 1931 reported five cases in which muscle was placed in the nephrotomy wound to control bleeding. He concludes that since nephrotomy has a rather high mortality due to postoperative hemorrhage (8 to 10 per cent in his experience) he proposed to use a piece of the lumbosacral muscle cut the size and shape of the kidney wound and pressed into it and lightly fixed by a few cat-

tribution it was apparently overlooked by both of them as no reference was made to it by either. Risley's work consisted of 12 experiments on dogs, five of which were upon the kidney, three using muscle, one fascia, and one fat. He found that histologically the line of contact of muscle tissue against bleeding surfaces showed an excess of blood platelets and fibrin in considerable degree five to ten minutes after the application and rightly states that its value lies largely in its thrombokinetic content. From his twelve experimental studies he concludes

1 The ideal hemostatic in wounds of parenchymatous origin is interposed muscle tissue taken at the time of operation from the patient's own body

2 Such muscle in order to most effectively stimulate fibrin formation should be jaggedly cut with a knife, not crushed as with scissors, nor should its hemostatic properties be extracted by its contact with salt solution

3 Fascia and fat act to a more limited degree as hemostatics

After seeing the remarkable properties exhibited by the viable muscle grafts, I was very anxious to try some experiments with particular reference to the kidney. The work presented here is only a preliminary report on a problem which we expect to work and report on from time to time through the years without perhaps exhausting all of its possibilities. Possibly you will bear with me while I present to you a rather fragmentary study of a subject that seems to me to be of tremendous importance to us as urologists

EXPERIMENT NO I

The left kidney of a 10 kg dog was exposed and lifted out of the wound. An incision one half the length of the kidney (3 cm) was made 2 cm deep into the kidney in the midline extending well into the parenchyma of the kidney causing profuse hemorrhage. The bleeding was temporarily controlled by finger pressure upon the renal artery. The live muscle graft which had been prepared from the latissimus dorsi muscle $6\frac{1}{2}$ cm long and 2 cm wide was then pressed into the kidney wound and held in place with the fingers for three minutes. The pressure upon the pedicle was released and all bleeding had been stopped by the live muscle graft which had tightly adhered to the wound. No sutures whatever were used to hold the graft in the kidney incision. The kidney was placed gently back in the abdomen and the wound closed in layers. This dog died 20 hours later of the sodium amylal anesthesia. Examination of the operated area revealed no hemorrhage. The muscle graft was densely adherent to the kidney wound, completely obliterating it. The tremendous flow of blood occasioned by so large an incision into the kidney parenchyma and the ease with which the live muscle graft controlled it was a rather dramatic procedure. It was remarkable that the hemorrhage was completely controlled within a space of three minutes and that without the aid of sutures. All other experimenters using nonviable muscle grafts have made use of sutures to hold their tissues in place.

EXPERIMENT NO II

This was quite similar to the first except that the wound in the left kidney was larger and the live muscle graft longer. The kidney pedicle was compressed with the fingers and the viable

muscle graft was pressed into the wound in the kidney. In this case the kidney incision was so large that the prepared muscle graft did not quite cover the edges of the wound so that pressure had to be maintained for eight minutes before the pedicle could be released and we were sure of complete hemorrhage control. The kidney was gently replaced in the abdomen and the wound closed in layers leaving the muscle graft passing through the abdominal wall and into the peritoneum. This dog was not sacrificed until 60 days later when it was found that there had been neither infection nor hemorrhage and the muscle graft had not degenerated in any way and it still adhered to the kidney.

EXPERIMENT NO III

The left kidney of a 17.5 kg dog was exposed by a loin incision. A piece of live muscle was prepared 7 cm in length and made ready for use. The kidney was delivered and an incision 2 cm long was made, cutting out a wedge shaped piece out of the lower pole of the kidney. The muscle graft was spread out flat over this wound and pressed down into it. After five minutes the graft adhered and the hemorrhage ceased. Due to the position of the graft in relation to the kidney wound it was feared that the graft might be peeled out of the wound when the kidney was replaced, so a single mattress suture was placed to prevent this from happening. The dog completely recovered from the operation.

EXPERIMENT NO IV

In a 10 kg dog, the right kidney was exposed. A viable muscle graft 8 cm long was prepared from the external oblique. The kidney was split from pole to pole down to the kidney pelvis. The muscle graft was pressed down into the wound while holding the pedicle compressing it with the fingers. After two minutes the pedicle was released and the blood welled up from the wound. Pressure was maintained for another four minutes when it was again released. This time the bleeding was controlled. No sutures were used. The dog was sacrificed 60 days later because of distemper. The muscle graft was still good and showed no signs of degeneration.

EXPERIMENT NO V

Dog No 43. A left rectus incision was made 12 cm in length. A piece of the left rectus muscle was prepared as a viable muscle graft. The left kidney was then delivered out of the wound and an incision made cutting off the lower third of the kidney. The pedicle was compressed with the fingers and the viable muscle graft applied. The graft adhered promptly to the cut surface but was not quite large enough so that a supplementary smaller graft had to be added. This was not a viable graft. It adhered to the cut surface and in five minutes all bleeding had

ceased. The dog died 31 days later and the examination showed no apparent cause of death. The viable muscle graft was still in place and the muscle showed no degeneration. The non-viable piece had sloughed off and completely disappeared. There had been no hemorrhage and no infection.

EXPERIMENT NO VI

Dog No 39. The right kidney of a 16.3 kg dog was exposed by a lumbar incision and delivered out of the wound. The pedicle was stripped of its fat and coverings so that the renal vein was exposed. A viable muscle graft was prepared from the external oblique. An incision was made into the renal vein with the point of a sharp knife 3 mm in length. Blood poured out in a steady stream. The muscle graft was pressed down over the wound in the vein and it immediately adhered and the bleeding ceased within three minutes' time. Because of the fact that there seemed to be some tension on the viable muscle graft where the kidney was replaced, it was cut off from its attachment and placed back with the kidney. The dog recovered. No hemorrhage, no infection. The dog was killed because of a distemper epidemic among our animals 41 days later. The muscle had degenerated but was still adherent to the renal vein. This remarkable experiment had a practical application a short time later when, in the course of a rather complicated pyelotomy for a large stone in a human being, I accidentally injured the renal vein so that it was badly torn. I immediately made pressure on the vein while a muscle graft was prepared and applied the muscle to the wounded vein and made steady pressure for three minutes. The graft adhered and the bleeding ceased. The kidney was replaced and the patient recovered. I believe that, in injuries to the renal vein in the course of operative procedures, the application of live muscle to the wounded vein is a much simpler and very much safer procedure than an attempt to suture the vein. The second human case is one in which I did a nephrotomy for stone, having incised the lower pole of the kidney. A live muscle graft derived from the quadratus lumborum was prepared and placed in the wound and the wound closed over it by the usual means of chromic mattress sutures with pieces of fat in the loops to prevent cutting. I did not have quite the requisite courage to place the graft without sutures although I feel perfectly certain that it would have adhered as firmly as it did in the experimental animals. Eugen Joseph did not trust any of his nephrotomies without sutures. How far one may go in this direction, I hesitate to say without further experimental work. I am not yet advocating the interposition of muscle grafts, viable or non-viable, in human surgery even though in these two cases cited it seemed to be a safe procedure.

EXPERIMENT NO VII

The next experiment was on a dog in which I had previously operated the left kidney. The right kidney was exposed by a lumbar incision and the kidney delivered. A live muscle graft 7 cm in length was prepared from the external oblique muscle. The kidney was split down to the pedicle from pole to pole. The pedicle was compressed with the fingers and the thick muscle graft laid in the wound. The kidney was then bound together with Lowsley's ribbon catgut 5/8" wide, one on either side of the hilus and these tied rather securely. The muscle graft contracted somewhat so that it seemed necessary to place one mattress suture near the end of the graft, spoiling what would otherwise have been a perfect demonstration of the usefulness of this unique closure method of Lowsley.¹² I was rather fearful that, in so complete a division of the kidney, nothing would prevent fatal hemorrhage, but the combination of the live muscle graft and Lowsley's bands prevented hemorrhage. This dog weakened and was ill so that 27 days later we sacrificed the animal and found that there were many adhesions to the surrounding organs. There had been no hemorrhage or infection. One of Lowsley's bands had completely disappeared. Parts of the second one could be seen not quite completely absorbed.

I feel certain that Lowsley has hit upon an idea that will prove of great value in kidney surgery and I intend to pursue the experimental work farther in this direction until I have some more definite data to present. So far this seems to promise much in the way of improved technique in nephrotomy. Much more remains to be done in this interesting and fertile field.

The applications that I see so far as they relate to the field of urology are many. In kidney surgery, I believe this method of live muscle grafts may have considerable application particularly in nephrotomy. In blood vessel surgery, especially injuries to the renal vein or to the aorta, it will replace attempts at suturing these fragile vessels in such difficult situations. In hemorrhage from the urethral bulb or even the prostatic bed, live muscle grafts can be freely used. In wounds of the corpora cavernosa or even the use of live muscle grafts in fibrosis of the corpora cavernosa to act as a framework upon which a new endothelial structure can be formed is not entirely visionary.

I have not touched upon the physiology of the remarkable hemostatic properties of live muscle tissue because that is pretty well known and much work has been done to attempt to explain all the processes, though our knowledge of these processes is not as yet complete. The pathology which the live muscle graft induces in the kidney wounds and the microscopic pictures are not yet complete but are being studied and will be presented at a later date.

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DISCUSSION

DR. WILLIAM C QUINBY I have been most interested in the presentation which Dr Ockerblad has been kind enough to make to us, for it brings up for discussion many different phases of both physiology and surgery

In the first place we have to deal with the question of the physiology of the coagulation of the blood which is still a rather abstruse matter It is known that muscle tissue, when cut away from its support, is quick to produce coagulating substances It is this which one takes advantage of in using muscle tissue for hemostasis

Dr Harvey Cushing, now Professor of Surgery at New Haven, once studied this question in detail Inasmuch as fibrin is an element in the coagulation of blood he tried to devise various methods of applying fibrin, taking blood collected sterily and whipping it into sheets of fibrin We used these for a while in the laboratory at the Harvard Medical School and once or twice I used it clinically as a method of applying a quick styptic to parenchymatous bleeding Unfortunately it was not successful The fibrin acted as a foreign body so that the wounds did not heal by first intention though hemostasis was satisfactory Muscle itself, however does do exactly what Dr Ockerblad has said It promotes coagulation of blood The factors which surround its successful use are several, however

In the first place the bleeding must not be too profuse As Dr Ockerblad has stated, bleeding must be controlled in the beginning by pressure on the renal pedicle In other words, it is not possible to make an incision into the kidney and remove whatever is necessary or make for instance a heminephrectomy without having previously prepared that kidney to such an extent that one has control over the vascular pedicle, because the mere force of the arterial bleeding will wash the muscle graft away so that it has no chance to act Pressure, therefore, is a factor in controlling hemorrhage from such parenchymatous organs as the kidney the liver and possibly the spleen even more important than Dr Ockerblad has suggested

There are various other methods of controlling hemorrhage from the kidney of which one is the use of the high frequency electric current. For instance, having made the kidney sufficiently mobile to control the vascular pedicle if one then opens the whole kidney by a complete or partial nephrotomy controlling the vascular pedicle actually picks up the important bleeders on very fine hemo-

stats and then applies the high frequency electric current to the handle of the hemostat a sufficient control of the immediate hemorrhage will frequently be secured

In closing I wish to congratulate Dr Ockerblad on his splendid work.

DR. RICHARD CHUTE May I ask Dr Ockerblad when he discusses his paper if he will comment on whether there is any value whatsoever in non viable tissue I take it he means viable as attached at one end and I wonder if non viable tissue has any value

DR. J H CUNNINGHAM What I have heard this evening impressed me particularly because it is a general principle rather than a procedure that is devoted entirely to our specialty Any general principle, I think, that may be applied to our specialty is far more important

Being conversant with the literature that Dr Ockerblad has presented from time to time, I have always been impressed with one fact—he always seems to hit the nail on the head I think his kidney clamp is a good example Now when he comes with a general principle applied to something that we are all confronted with, although we have overcome our difficulties by methods already in use, this new principle of controlling kidney hemorrhage is certainly something that is a great addition to what we already know

The conservation of kidney tissue has always been to my mind a very important thing, and the employment of mattress sutures to close kidney wounds has always been in my opinion a procedure which probably destroys considerable kidney tissue We have been trying to get away from this by various improvements in technical procedures The idea of implantation of fat with less suture in the kidney would, I think, have been helpful Probably all here have had instances where the patient's general condition was such that we have tamponed the kidney incision without any suture, but with control of bleeding I recall several instances where I have used the kidney elevating clamp, I believe it is called, to compress the kidney and stop hemorrhage This clamp left for 24 hours obviates any suture However, to have a general procedure such as we have heard of tonight for our use advocated by somebody who has not too much theory, but a very definite viewpoint of practical application is I think, of extreme importance I am delighted to have had this new method of controlling kidney incision hemorrhage added to the various methods that I already employ

DR. AUGUSTUS RILEY I believe the speaker's ideas of hemorrhage control express great thought. In the past few years I have done partial nephrectomy in a few selected cases, and was able to control the hemorrhage without much, if any, difficulty with properly placed sutures One case especially I recall at the present time A heminephrectomy was done and the hemorrhage was controlled very easily with deeply placed sutures Apparently the half of the kidney left was not damaged to a great extent, because a split function done some time after the operation, was good and compared well with the non-operated kidney in proportion to the amount of kidney tissue left at the time the heminephrectomy was done

I agree with Dr Cunningham, our method of hemorrhage control in kidney surgery may be rather crude in appearance, but it does the work.

I am glad to have heard the speaker's paper, am glad to know his method of controlling hemorrhage and will certainly try it when the opportunity presents itself.

DR. GEORGE G. SMITH I do not know of any paper which has been presented here that I can remember which has in it so much that may prove of value to men who are doing operative work on the kidney and doing general operative surgery. It seems to me that Dr. Ockerblad has brought forward here a new principle which will be more than helpful.

I would like to ask Dr. Ockerblad if he has any idea as to whether, in using this in a kidney in which there is sepsis, say after removal of a stone from a fairly septic kidney, the muscle graft would hold in the same way or whether the sepsis would be a factor operating against it.

DR. OCKERBLAD (In closing) Dr. Smith has raised the question of sepsis in connection with muscle implants and that is right in line with the query about live muscle grafts. One of the main points about live muscle grafts is that they apparently are not so subject to infection as the detached pieces of muscle. The detached muscle grafts are frequently the subject of infection. One of our workers did nephrotomies on six dogs and used detached muscle as implants in these nephrotomy wounds and three of the dogs developed infection. In over thirty other dogs we have had only one infection with live muscle grafts. Apparently the live muscle grafts have considerably greater resistance to infection.

In answer to the question which Dr. Smith has brought up as to whether we have tried them in infected wounds, I can only say that we have not done so as yet. We will have to deliberately make these infections in dogs and then implant muscle tissue to see what happens but I fear that muscle tissue cut off this way from its blood supply will act as a culture media and will not aid in hemosta-

sis so well as it would when still attached to its blood supply.

Dr. Quinby has been very complete in his discussion. His statement that fibrin had been a failure as a preparation in advance is perfectly true and I carefully avoided this whole subject inasmuch as there have been volumes written on it. There seems to be no end to it if one starts a discussion of the various theories of the formation of blood clot. However, these essential hemostatic agents cannot be prepared and stored up in advance. There must be something in the piece of live muscle or those freshly detached which those prepared juices do not have.

Pressure certainly has a marked effect in controlling hemorrhage in parenchymal tissue like the spleen, liver and kidney although I think the kidney tissue is quite different from either spleen or liver and perhaps the bleeding in kidney tissue is a little more easily controlled than that in spleen tissue, but pressure was not a factor in the veins which Dixon opened and pulled the muscle strips through. The long live muscle grafts stopped the hemorrhage in that situation just as readily as they did in the kidney structure. Take the adherence of these muscle flaps to the vein and to the cava. In these places we used just enough pressure to make them stick fast and the graft adhered permanently in a very short time.

Dr. Chutes question about non viable muscle tissue, I have perhaps covered.

There is much more work to be done on this very important subject and this presentation is merely a summary of the work we did last summer.

I want to thank you for your kind attention and your generous participation in the discussion.

WHERE THE DEATHRATE HAS INCREASED

On the basis of their crude deathrates, three diseases—cancer, diabetes and heart disease—recorded higher mortalities in 1933 than ever before. The great bulk of the deaths from these diseases occurs among persons in the higher age ranges—specifically from age 55 on. Accordingly it is necessary in considering the course of the deathrate from these conditions (especially with respect to what has transpired during recent years) to take into account a change that has occurred in the age distribution of Metropolitan Industrial policyholders as in the general population. There has been a shift whereby a larger proportion of the insured is finding itself in the higher age groups. This increase in the average age of this group in itself tends to raise the crude deathrate of these three diseases. Its effect, in fact, has been so marked that it is necessary to use standardized deathrates which make allowance for changes in age distribution in order to make valid comparisons of the 1933 deathrates with those of previous years. When standardized rates are prepared we find that the 1933 cancer and diabetes deathrates are higher than ever previously recorded although the rise is shown to have been by no means so sharp as the crude figures would indicate. The heart disease deathrate on the other hand is actually lower than for both 1930 and for

1911, the year in which the Metropolitan began to compute mortality rates for individual causes of death and shows only a slight rise as compared with that for 1932.

When analysis of what has happened in recent years is extended to the several types of cardiac impairments, we find much that is encouraging in the trend of the heart disease deathrate. First, only in the higher age groups is the mortality increasing and the heart disease prevailing in this period of life is very largely of the arteriosclerotic or senescent type. Accordingly the increased number of deaths is due in great measure to the aging of the population whereby more and more persons attain those higher ages where senile degeneration of the heart is the most common cause of death. This may be a by-product of the increase of the average duration of human life. The encouraging side of the picture is a marked declining tendency in the death rate from the endocardial and valvular affections in early adult and middle life. These types of cardiac disease have their origin largely in acute rheumatism, syphilis, certain communicable diseases of childhood and focal infections. We may look forward to continued improvement as the result of the decline which is going on in the incidence of these controllable diseases.—*Bulletin Metropolitan Life Insurance Company*

END-RESULTS IN EXOPHTHALMIC GOITER*

Patients Treated in Pre-Iodine Days

BY HELEN SINCLAIR PITTMAN, M D †

THE introduction of the therapeutic use of iodine has revolutionized the treatment of exophthalmic goiter. It has seemed worth while, therefore, to investigate the present condition of several patients who were treated for that disease before iodine was introduced. For the purpose of this study an attempt has been made to follow the records of 168 patients treated at the Massachusetts General Hospital prior to 1923, the year in which Plummer's¹ first article on the use of iodine in toxic goiter appeared. The patients comprising this group were unselected. They received their treatment between 1913 and 1923. The minimum follow-up period is, therefore, nine years. An effort has been made to trace all individuals treated during those years. All the 168 patients in this series were followed for a period of not less than six months after leaving the hospital, and most of them for at least two years. Hospital patients, however, in a city are usually those of a floating population and it is impossible at the present time to locate about half of them. Of the 168 patients treated in the years mentioned, 94 have been located. Of these, 20 have been unable to return to the hospital but have written of their condition, two have been reported from outside sources, 8 are dead and 64 returned. Each individual who returned had basal metabolic rate determinations and any special examinations (electrocardiogram, blood, urine and so forth) indicated.

There is thus information concerning 94 individuals, or 55 per cent of those treated.

Before the introduction of iodine thyroid surgery in Graves' disease was not the simple matter which it is to-day. The operative mortality rate in Graves' disease at the Massachusetts General Hospital in the years 1909-1914² was 15 per cent. From 1920-1921 this had been brought down to three per cent.

There were three accepted modes of treatment:

- 1 X-ray alone. This was given to 61 patients, on 38 of whom there are recent data.
- 2 X-ray combined with surgery. This was employed in 35 patients, on 26 of whom there are recent data.
- 3 Surgery alone. This was practiced on 67 patients, on 30 of whom there are recent data.

*From the Thyroid Clinic of the Massachusetts General Hospital.
This study was made possible by a grant from the Proctor Fund for the Study of Chronic Disease of the Harvard Medical School.

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In evaluating the status of the patients this year, I have grouped them according to the treatment which they received. Of the original series of 168 patients, five records have been destroyed, making the classification of treatment based on a series of 163 instances.

Group I, comprising 38 individuals, were treated by x-ray alone. Holmes³ wrote in 1919 that it is possible to decrease the activity of the thyroid gland and probably to destroy its glandular structure by exposure to the Roentgen ray. Such treatment applied in cases of thyrotoxicosis produces relief of symptoms and shortens the course of the disease. He felt at that time that the Roentgen ray accompanied by rest should be tried in all cases of thyrotoxicosis and should be continued for a sufficient time to at least cause involution of the thymus, before resorting to surgery. The dangers of x-ray are less than those of surgery and in the milder cases it obviates the necessity of interfering with the daily life of the patient. If relief was not obtained after nine treatments, or if for any reason it was desirable to hasten the process, surgery might be recommended. The previous treatment by Roentgen rays will have been of benefit in reducing the operative risk by destroying the thymus gland. In a later article Holmes⁴ gave as indications for operation, the failure to respond as indicated by a lowering of basal metabolic and pulse rates with corresponding gain in weight after six months of treatment. Means and Holmes⁵ reported that about two thirds of their cases treated by this method showed recovery or improvement. Read⁶ has recently reported the present status of eight patients of a series of 36 treated prior to 1924, all of whom are now well. Hayes⁷ found that of 100 consecutive, unselected, private patients treated by x-rays in the years 1911-1926, 62 per cent were cured in 1927. No individual in his series developed myxedema.

1 In the present series there are 38 instances of treatment by x-ray alone. Of these 26 are cured of their thyroid disease, four are dead, three have chronic mild hyperthyroidism, four are myxedematous but controlled, and one has a severe complication.

The last patient mentioned presents one of the most serious complications of hyperthyroidism. After eight treatments she was completely relieved of her thyrotoxicosis but had a severe residual exophthalmos which, because of corneal ulceration, ultimately required bilateral enucleation. This case was reported by Lahey⁸.

2 Twenty six individuals in the present series were treated by x-ray in conjunction with

surgery, one is dead, 22 are well, and three have chronic mild hyperthyroidism

Group III is made up of 30 individuals who were treated by surgery alone. This was, in those individuals who were toxic, a series of graded operations: ligation of one or both superior thyroid arteries, hemithyroidectomy or subtotal thyroidectomy. With patients prepared for operation by bedrest alone or combined with the administration of quinine hydrobromide, the operative risk was too great, in most instances, to allow of the single operation of sub-total thyroidectomy commonly employed at the present time. The single operation of choice was hemithyroidectomy. In 1920, Judd⁹ obtained information from 88 individuals out of a series of 100 consecutive exophthalmic goiter patients on whom he had operated in 1914 (64 primary or secondary ligation, 36 primary thyroidectomy). Sixty-five and eight-tenths per cent were cured and 15 per cent had died from all causes during the six years. Hueck¹⁰ was able to follow 54 patients of a series of 79 treated between 1912-1925 by surgery alone or by x-ray in addition to surgery and found that 78 per cent were able to do full work.

In our series, 30 individuals were treated by surgery alone. Of these, three are dead, 21 are well, two have chronic mild hyperthyroidism, three have myxedema, and one is in a state mental hospital with a major psychosis.

The results obtained in the three groups are compared in table I.

now, 15 years after her last radiation presents the picture of chronic mild hyperthyroidism with a +20 per cent rate. Two other individuals (E N No 48 and E D No 316) were treated over a period of four years and are now well.

Of those treated by x-ray combined with surgery, 15 were given radiation before operation, five after, three both before and after, and in two individuals radiation was done following ligation of the thyroid arteries and before hemithyroidectomy. In this group the larger number (14) required from six months to a year for treatment, four completed their treatment in less than six months and one (M G No 1382) was treated over a period of three years. In 1922 she had an initial rate of +40 per cent, a right lobectomy with removal of the isthmus was done in April of that year without affording her permanent relief. Four Roentgen ray treatments were given in 1924 but it was not until February, 1927 that her rate dropped to a normal level (-3 per cent). At the present time she is cured of her thyroid disease but at the age of 66 years she has arteriosclerotic heart disease with a blood pressure of 160/90.

Of the individuals treated by surgery alone, 19 had one operation (four subtotal and 15 hemithyroidectomies), five had two operations, five were operated upon three times and one (M L No 326717) had five operations, the first in 1906, the last in 1913. At the present time she has a basal metabolic rate of +5 per cent with a pulse of 69. She gives evidence, how-

TABLE I

Treatment	Original Series	Recent Reports	Well	Chronic Hyperthyroidism	Myxedema	Dead	Special
X-ray alone	61	38	26 (68%)	3	4	4	1
X-ray combined with surgery	35	26	22 (86%)	3	—	1	—
Surgery alone	67	30	21 (72%)	2	3	3	1
Records destroyed	5	—	—	—	—	—	—
Totals	168	94	69 (73%)	8	7	8	2

THE RECORDS OF 168 CASES

Discussion. In the x-ray group 18 individuals received treatment for a period of between six months and one year. Two individuals received each one treatment only (I C No 1649 and A M No 1170), both are now well. One of the most striking points in the records of this series of individuals is the length of time required for some of them to attain a normal metabolic level after the beginning of treatment. A L No 25 had an initial rate of +83 per cent in 1915 during which year she had seven x-ray treatments and never became normal until 1922 when she had a rate of +4 per cent. At present she presents a cure with a rate of -4 per cent and at the age of 50 years has no evidence of cardiovascular disease. J B No 68 received 29 treatments over a period of four years and

ever of hypertensive heart disease with a blood pressure of 238/130.

Summary and Conclusions. Recent data (64 examinations, 30 letters) are presented on 94 individuals out of a series of 168 patients treated for exophthalmic goiter between 1913 and 1923. These individuals were treated by one of three methods: x-ray, x-ray combined with surgery, or surgery alone. Sixty-nine (73 per cent) are well, eight have chronic mild hyperthyroidism, seven are myxedematous, one individual has had a bilateral enucleation for corneal ulceration secondary to a persistent severe exophthalmos, one is in a state mental hospital. The most satisfactory results have been obtained in the group treated by x-ray combined with surgery (86 per cent cures). In the groups treated by x-ray alone or surgery alone, there was very little dif-

ference, 68 per cent cures in the former and 72 per cent in the latter. The period required for relief of symptoms varied from a few weeks in two instances to a maximum period of seven years, with no consistent difference in the three groups in time required from beginning of treatment to cure. In the majority of individuals relief from symptoms was obtained in from six months to one year, a far longer time than is now usually required for cure by subtotal thyroidectomy in the iodized patient. The methods employed in the years studied are shown to have given good results after a period of not less than nine years, but each method entailed a longer period of treatment than do present methods.

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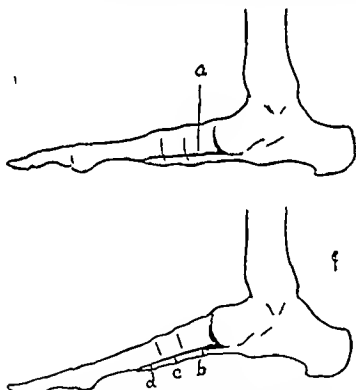
FLAT FOOT

An Anatomical Reconstruction

BY FREDERIC JAY COTTON, M.D.,* AND GORDON MACKEY MORRISON, M.D.*

The vast majority of flat feet call for no operation.

Many flat feet involve bony change, these cannot be "reconstructed" in any literal sense, must be operated on if need be by wedge operations, etc. But in others in which in Brack-



OPERATION FOR FLAT FOOT

Upper figure Shows the open astragalo scaphoid joint—the cut (a) above the supporting ligament carried forward across bones and articulations.

Lower figure The foot corrected, the bone-ligament flap carried forward. The rear end of the scaphoid in the graft (b), the scaphoform articulation (c), the cuneiform metatarsal (d) are all carried forward one-half inch—and the whole strip pegged in place.

ett's phrase "the bony architecture is unchanged" one can reconstruct. Among these is a type often seen in young men in which a long lax foot, pronated flat, shows perfectly evident relaxation of ligaments not presaging much chance of correction by exercise. Only in such cases is this operation to be considered. It rests on the fact that the weight is transmitted from the top of the astragalus through its downward rotated head to the supporting calcaneo-scaphoid ligament, a very definite and very strong structure even when relaxed. The operation consists in transferring the scaphoid at-

tachment of the ligament farther forward so as to tighten up the ligamentous support. The technique is shown in the accompanying cut.

The astragalo scaphoid joint is opened and a rather broad, thin osteotome, pointing outward and about 35 degrees downward, is driven through to the plantar surface of the bone, separating (roughly) one quarter of the scaphoid.

The line of the cut is continued forward, disregarding joint intervals, to $\frac{3}{4}$ inch in front of the base of the first metatarsal.

If then the foot is corrected into proper position in the direction of cavo-varus, then the bony flap, containing parts of scaphoid, of internal cuneiform and of metatarsal base, is easily slid forward to a new hold. The bony flap is loosened, never dug out of its bed on the under side.

The front end, the metatarsal piece, may be trimmed off as superfluous, and the main flap is to be pinned in its new place with small ivory or bone pegs.

CASE

J. D. (man now 27 years old), operated on at the Boston City Hospital in 1920, was examined in July, 1933. One foot only had been operated on (with expectation of doing the other after an interval). Thirteen years after it showed a foot perfectly normal in stance and mobility. The left foot still showed a lax flat foot of extreme type with troublesome weakness.

In a very few other cases treated the result was good, but none other followed up for a long time.

The operation in no way interferes with lateral rotary motion in the subastragaloid joint. The only drawback is the need of waiting for solid bony union before unrestricted unsupported weight bearing is resumed.

This operation is applicable to only a small selected group of cases, it is only one of many corrective measures for the relief of flat foot.

*For records and addresses of authors see page 817 issue of April 1, 1934.

INTERN TRAINING IN MASSACHUSETTS*

By the Committee on Medical Education and Medical Diplomas
of the Massachusetts Medical Society†

IN this country it is generally agreed that one of the most significant phases of medical education is that which has to do with the training of hospital interns and that the future progress of medicine depends in no small degree upon the way in which these interns are trained. During 1933, more than 5000 medical school pupils received postgraduate education as interns in our various hospitals in New England alone, 510 interns were at work in the fifty-nine hospitals approved by the American Medical Association to offer such training.

The Committee on Medical Education and Medical Diplomas of the Massachusetts Medical Society, recognizing the importance of internships to medical progress, has considered it desirable to make a preliminary survey of the internships available in this state in order to ascertain if possible, how our internships are filled, whether they are good, bad, or indifferent and whether any suggestions can be offered to make them more valuable. The results of this survey are reported here.

MASSACHUSETTS INTERNS

Thirty-one Massachusetts hospitals are approved by the American Medical Association for intern training and help to educate each year a group of 312 doctors. During 1933, these doctors assembled from far and wide, but were mostly graduates as might be expected, of Tufts, Harvard and Boston University. In addition, thirty-six other American Medical Colleges, two Canadian and three foreign schools, sent pupils to be trained here. Two hospitals have attempted an experiment of very questionable usefulness by receiving as interns doctors from unrecognized medical schools.

The interns of 1933, presumably, were a typical group. On the whole, they were recent graduates, migrating as quickly as possible from the shelter of their various schools, to the broader experience of hospital life. One man who graduated in 1925, received an appointment. He was by far the oldest man on the list, he had come to us from the West and was taking this means to obtain in Boston the postgraduate training in surgery that he felt he needed.

Five of our hospitals claim not to discourage the appointment of women interns. In spite of this, but ten women interns were enrolled. This fact perhaps deserves comment since now-

adays nearly five per cent of all medical students graduating each year are women. A fair annual quota of women for Massachusetts to enroll as interns would be nearer fifteen than ten. Good women students can be used very advantageously and should be given better opportunity.

If the 312 Massachusetts interns are regarded as a class, it is interesting to note how this class is made up scholastically. Half of these students graduated in the upper third of the medical schools whence they came, and only a fifth in the lower third. Thus Massachusetts cannot complain of the intellectual abilities of her interns.

MASSACHUSETTS INTERNSHIPS

The quality of the Massachusetts internships which are available is a more difficult matter to analyze. In general, internships are of three types. The straight "medical" or "surgical," the "rotating" and the "special service" internship. They vary in length from one to two or more years' duration and are designed to offer intensive postgraduate instruction. "Rotating" services are much more frequently offered than the straight "medical", or "surgical" and are planned to give the student a bird's-eye view of his profession. The typical "rotating" service, for example, is too short. In two years' time or less it attempts to include a period of work in surgery, medicine, obstetrics, eye, ear, nose and throat diseases, and often in neurology, pediatrics and dermatology as well. The straight "medical", "surgical", or "special" services offer in about the same time interval a period of more concentrated training in one or the other more general or special branches of the profession.

Many factors play a part in determining good or mediocre internships. One very striking feature is the great variability in the number of hospital beds per intern. Several hospitals are understaffed and expect their interns to cover more than fifty beds per man, while at the other end of the list are two so arranged that they have an intern for each eleven beds. It seems far to assume that no intern can cover satisfactorily more than about thirty beds, if he is asked to do more than this he cannot receive a very good training.

In order to show certain of the most noteworthy differences between hospitals which attract good and mediocre intern material comparative data have been tabulated from four hospitals of somewhat similar size, the first two affording the best type of medical or surgical training,

*Presented before the New England Hospital Association at Boston February 17, 1934.

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ference, 68 per cent cures in the former and 72 per cent in the latter. The period required for relief of symptoms varied from a few weeks in two instances to a maximum period of seven years, with no consistent difference in the three groups in time required from beginning of treatment to cure. In the majority of individuals relief from symptoms was obtained in from six months to one year, a far longer time than is now usually required for cure by subtotal thyroidectomy in the iodized patient. The methods employed in the years studied are shown to have given good results after a period of not less than nine years, but each method entailed a longer period of treatment than do present methods.

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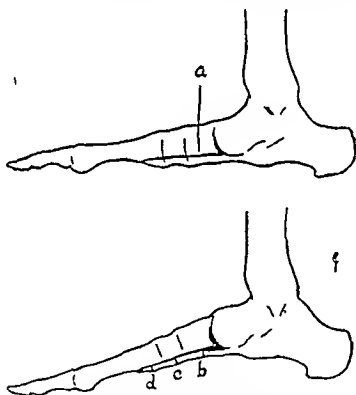
FLAT FOOT

An Anatomical Reconstruction

BY FREDERICK JAY COTTON, M.D.,* AND GORDON MACKAY MORRISON, M.D.*

THE vast majority of flat feet call for no operation.

Many flat feet involve bony change, these cannot be "reconstructed" in any literal sense, must be operated on if need be by wedge operations, etc. But in others in which in Brack-



OPERATION FOR FLAT FOOT

Upper figure Shows the open astragalo-scapoid joint—the cut (a) above the supporting ligament carried forward across bones and articulations.

Lower figure The foot corrected the bone-ligament flap carried forward. The rear end of the scaphoid in the graft (b) the scapho-cuneiform articulation (c) the cuneiform metatarsal (d) are all carried forward one-half inch—and the whole strip pegged in place.

ett's phrase "the bony architecture is unchanged" one can reconstruct. Among these is a type often seen in young men in which a long lax foot, pronated flat, shows perfectly evident relaxation of ligaments not presaging much chance of correction by exercise. Only in such cases is this operation to be considered. It rests on the fact that the weight is transmitted from the top of the astragalus through its downward rotated head to the supporting calcaneo-scapoid ligament, a very definite and very strong structure even when relaxed. The operation consists in transferring the scaphoid at-

tachment of the ligament farther forward so as to tighten up the ligamentous support. The technique is shown in the accompanying cut.

The astragalo-scapoid joint is opened and a rather broad, thin osteotome, pointing outward and about 35 degrees downward, is driven through to the plantar surface of the bone, separating (roughly) one quarter of the scaphoid.

The line of the cut is continued forward, disregarding joint intervals, to $\frac{3}{4}$ inch in front of the base of the first metatarsal.

If then the foot is corrected into proper position in the direction of cavo-varus, then the bony flap, containing parts of scaphoid, of internal cuneiform and of metatarsal base, is easily slid forward to a new hold. The bony flap is loosened, never dug out of its bed on the under side.

The front end, the metatarsal piece, may be trimmed off as superfluous, and the main flap is to be pinned in its new place with small ivory or bone pegs.

CASE

J D (man now 27 years old), operated on at the Boston City Hospital in 1920, was examined in July, 1933. One foot only had been operated on (with expectation of doing the other after an interval). Thirteen years after, it showed a foot perfectly normal in stance and mobility. The left foot still showed a lax flat foot of extreme type with troublesome weakness.

In a very few other cases treated the result was good, but none other followed up for a long time.

The operation in no way interferes with lateral rotary motion in the subastragaloid joint. The only drawback is the need of waiting for solid bony union before unrestricted unsupported weight-bearing is resumed.

This operation is applicable to only a small selected group of cases, it is only one of many corrective measures for the relief of flat foot.

*For records and addresses of authors see page 817 issue of April 1st 1934.

teacher, so that everything the intern does can be scrutinized and criticized. The number of necropsies should be increased, interns and visiting staff doing all in their power to study diagnosis and treatment by the method of clinical-pathological correlation. In too many hospitals the intern's work is haphazard and superficial. The self-taught intern does not acquire much useful knowledge, he needs to be drilled in the art of practice, an art that can only be mastered by hard work intelligently controlled.

The intern should be encouraged to grow and develop. He should be urged to take an active part in staff conferences and in other medical meetings held under the hospital's auspices. Hospitals and staff meetings should be conducted regularly and with a certain degree of formality. They should be run off on time and the intern should present the cases under discussion, learning to speak on his feet, without notes, and clearly and succinctly. Too often, at such meetings, the intern is made to sit on the side lines and do the listening. This is discouraging, especially, as almost invariably with a little coaching, he can learn to give a good account of himself.

Hospital Trustees must be educated to realize that a Teaching Hospital requires certain equipment in addition to first-rate wards, laboratories and operating rooms. There must be an enthusiastic, well-selected staff acting under good leadership. There must be a sufficient number of interns in proportion to the number of beds so that each intern may have a chance to think and work at something out of his routine. There must be a suitable place for medical meetings and this room should contain apparatus for demonstrating charts, x-ray films or pathological specimens. There must be a library in the hospital, readily accessible to the interns and staff, and it should receive sufficient endowment to enable it to purchase up-to-date textbooks, as they are published, and to subscribe to the more useful medical journals.

The intern should be encouraged to write Medical writing, if it does nothing else, stimulates a beginner to wish to use a library properly, teaches him to read, analyze, criticize or abstract literature, and also something of facility of expression and of the difficulties of composition—all good things for a young doctor's development. The Allegheny County Medical Society of Pennsylvania has initiated an important experiment along this line by offering an annual prize of \$50 for the best case report submitted by interns of any approved hospital in the County. It would be a fine stimulus if the Massachusetts Medical Society were to offer a similar prize each year for the best case report written by an intern holding any of the Massachusetts rotating appointments. The chance to win such a prize might prove very inspiring.

The difference between good and bad intern training is not easy to analyze, since so much depends upon personalities. One fact, however, is very clear. The pace at which a hospital works and the quality of what it accomplishes depend on coöperation of the Staff, Trustees and Superintendent. These three bodies must understand each other's problems and must act in harmony. To admit that a hospital which trains interns is a Teaching Hospital, is a long step forward, for a Teaching Hospital has certain ideals and responsibilities which differentiate it sharply from an institution in which there is no teaching. The best organization of a Teaching Hospital differs in each community and requires careful consideration. Certainly no single plan of organization can be generally successful. The quality of the interns of Massachusetts can be improved and they can be given better training if the staffs, trustees and superintendents of our hospitals are interested to improve the medical education of interns and are willing to take an active part in advancing this aspect of their hospital's functions.

MORTALITY RATES

Telegraphic returns from 86 cities with a total population of thirty seven millions for the week ending April 7 indicate a mortality rate of 12.6 as against a rate of 11.6 for the corresponding week of last year. The highest rate (20.1) appears for Trenton N. J. and Wilmington Del., and the lowest (3.6) for Yonkers N. Y. The highest infant mortality rate (16.1) appears for Duluth Minn. and the lowest for Bridgeport, Conn. Knoxville Tenn., Lynn, Mass. Somerville Mass., South Bend Ind. and Yonkers, N. Y. which reported no infant mortality.

The annual rate for 86 cities is 12.7 for the fourteen weeks of 1934 as against a rate of 12.2 for the corresponding period of the previous year.

SUMMARY OF DEATHS AND DEATH RATES (ANNUAL BASIS) FROM AUTOMOBILE ACCIDENTS PER 100,000 ESTIMATED POPULATION FOR 86 CITIES FOR CORRESPONDING PERIODS OF 1934 AND 1933

	Week ending		First 14 Weeks	
	April 7 1934	April 8 1933	1934	1933
Total deaths	173	138	2,227	1,962
Deathrate	24.1	19.2	22.2	19.5

and the other two a "rotating" training less valuable

It is evident, on the whole, that the better scholars—and by and large they make the better interns—tend to concentrate in comfortably endowed hospitals where there is a resident staff large enough to carry forward a satisfactory type of clinical work, and in institutions where the percentage of necropsies is high. This fig-

time during their period of service. The amount of intra-mural illness should be kept as low as possible and this can only be accomplished by proper care of the personnel.

The Council on Hospitals and Medical Education of the American Medical Association approves of a "rotating" internship as an essential for a hospital to be approved for intern training. If young doctors are best initiated in

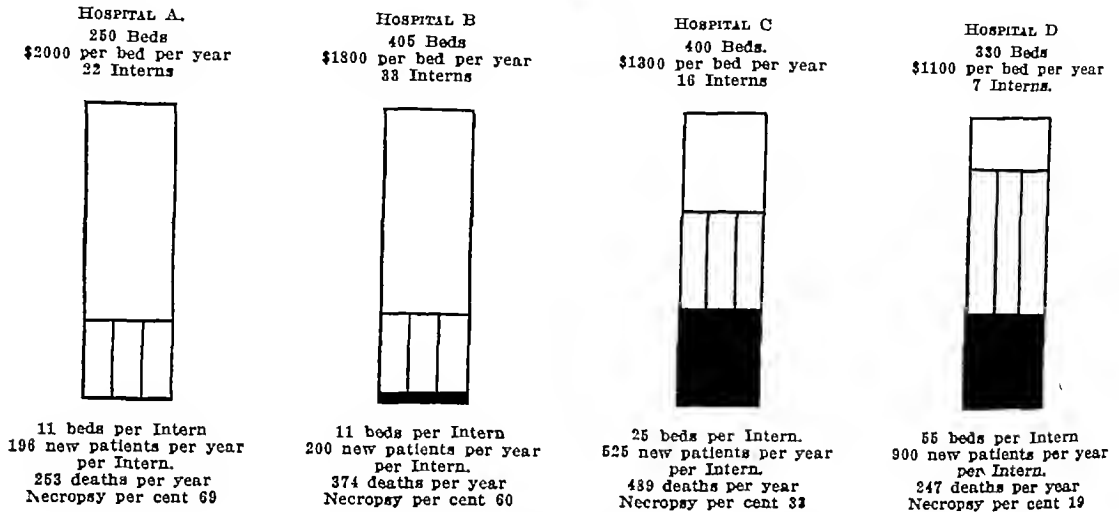


FIGURE 1

Interns of four hospitals. The plain column is proportion of interns in first third of their class, the solid column lowest third and the broken column middle third.

ure has come to be generally recognized as a fair index of the educational activities of a hospital.

HOW TO IMPROVE MASSACHUSETTS INTERNSHIPS

Massachusetts is in a position to improve her internships. There are many well-equipped hospitals, and excellent intern material is at hand each year. The problem is to develop these hospitals as centers of postgraduate education to better advantage, and to improve their general average of intern training.

Each hospital which has placed itself on record as being capable of training interns must recognize that in so doing it has assumed all the responsibilities of a Teaching Hospital. The Staff, Trustees, and Superintendent must admit this fact and must cooperate to improve the opportunities for their house-pupils to receive adequate and proper instructional facilities.

No intern should be appointed who is not a graduate of a medical college recognized by the Massachusetts Medical Society. No intern should be appointed without a personal interview and preferably should receive some sort of an examination regarding his abilities before he is accepted. The intern's quarters should be attractive, his food good, and he should have adequate facilities for rest, privacy, study and recreation. It has been pointed out that in one Massachusetts Hospital about a third of the interns enter the institution as patients at some

to practice by this kind of hospital experience, "rotating" internships must be made more desirable. At present, in Massachusetts, they are not greatly sought after. An appreciably poorer type of student is trained in hospitals offering this kind of internship than in those offering only "medical" or "surgical" services. In order to improve this state of affairs, the teaching in these hospitals must be conducted with especial care.

THE HOSPITAL AS A TEACHING CENTER

Staff, Trustees and Superintendents of hospitals with "rotating" interns should work together more purposefully to organize the best possible kind of intern teaching. For example, in every hospital a carefully considered and well-planned intern curriculum should be developed by an appropriate committee, certain staff members, especially if they have a bent for teaching, should be delegated to see to it that the intern's work is checked up, that his records are up-to-date and well and carefully written, that his routine laboratory and clinical work is properly done, that his physical examinations as recorded are accurate, that diagnoses are made correctly and that treatment is carried out properly and systematically. A visit with the intern should be made each day to each of the intern's patients by a competent member of the Visiting Staff, unhurriedly and as a

230/150 He remained in a semistuporous condition throughout that day, groaning continually On the following day however he was quite comfortable and quiet and was even allowed one cigarette His mind was clear

The day after this upon his request he was given a bedpan Five minutes later he was found breathing noisily, with his right eye closed, a blood pressure of about 125/100 and a very weak pulse He could not be aroused All his limbs were flaccid, but reflexes were obtained on both sides About fifteen minutes later he became very evanotic and in spite of artificial respiration died

DIFFERENTIAL DIAGNOSIS

DR TRACY J PUTNAM A man who is substantially healthy has two acute episodes one mild one, followed in three weeks' time by one which renders him unconscious I think our first thought on hearing the history to that extent is that the patient has had a cerebrovascular accident of some kind Perhaps the first thing to think of is that he had a thrombosis which later gave rise to a hemorrhage, a thing which we know often happens, although I think the three week interval is rather unusually long As we look over the precise symptoms that he had, however, that possibility becomes somewhat less probable and I think we can find a good many manifestations that can be explained better on a basis of subarachnoid hemorrhage than of hemorrhage within the cerebral substance In the first place pain in the back of the neck and headache are rather unusual with thrombosis That is apt to come on painlessly Another thing is the blood pressure We expect the blood pressure to come down following thrombosis or hemorrhage within the cerebral substance The mental perturbation is perhaps not very specific of one thing or another

Of course the onset of an accident in the bathroom is a very common manifestation

I think the past history adds nothing, at least the findings are not very germane to the situation here Nor is the neurologic examination very important, except that there are mild signs of meningeal involvement, specifically the difficulty in carrying out the Kernig test

I should like to call attention again to the persistent high blood pressure, which would certainly be unusual if this were the ordinary type of cerebral hemorrhage So is the spinal fluid when we come to that The fluid was grossly bloody, with an initial pressure of 300 and over a million and a half red cells That is an extremely bloody fluid of course, almost one third pure blood It would be very unusual for a man to have a massive hemorrhage deep in the substance of the brain and have enough of this hemorrhage leak into the spinal fluid to give him such a high cell count and for him to sur-

vive as long as this patient did Moreover, on centrifuging the fluid was seen to be xanthochromic, which is definite evidence of course that the hemorrhage has existed for some time That raises the presumption that it came on three weeks earlier I should like to call your attention to the fact that there were twelve hundred white cells, which again is evidence of long-continued irritation of the meninges from the presence of red cells in the fluid

The pressure apparently came down and so did the count of red cells, although the number of white cells increased This is what we should expect with a gradually improving subarachnoid hemorrhage

An interesting point is that we do not expect to find arteriosclerosis as an etiological factor in the ordinary type of subarachnoid hemorrhage Subarachnoid hemorrhage by and large is a disease of young people rather than of arteriosclerotic people I do not suppose, however, that the presence of arteriosclerosis will prevent subarachnoid hemorrhage, and it is quite possible that this patient has a congenital aneurysm, which is the ordinary cause in addition to arteriosclerosis

The terminal event I think is quite obviously a recurrence of the original hemorrhage, and once more it comes on with pain The neurologic findings are not adequate, it seems to me, to permit us to localize the site of origin of this hemorrhage The record is rather noncommittal on this occasion, although of course we know from experience that aneurysms are most apt to be in the circle of Willis or one of its branches Perhaps if we wanted to be very accurate about it we might say that the pain behind the left eye suggests that the aneurysm was on the left and that the pain was due to pressure on the sensitive meninges about the sinuses On the other hand it is a little hard to explain why his right eye should be closed under these circumstances at a later attack.

To sum up, this man obviously has arteriosclerosis with a high blood pressure, and we should expect to find evidence of that in the brain He also evidently has a subarachnoid hemorrhage It is difficult to be sure that he has not a certain amount of intracerebral hemorrhage, but that seems unlikely It seems more probable that he has a combination of congenital aneurysm with arteriosclerosis.

CLINICAL DIAGNOSIS

Subarachnoid hemorrhage

ANATOMIC DIAGNOSES

Subarachnoid hemorrhage

Ruptured aneurysm of anterior communicating artery

Probable rupture of left middle cerebral artery

Duodenal ulcer, perforated

CASE RECORDS of the MASSACHUSETTS GENERAL HOSPITAL

ANTE MORTEM AND POST MORTEM RECORDS AS USED
IN WEEKLY CLINICAL PATHOLOGIC EXERCISES

EDITED BY RICHARD C CABOT, M.D.
F M PAINTER, A.B., ASSISTANT EDITOR

CASE 20171

PRESENTATION OF CASE

This is the case of a forty-two year old American

Three weeks before admission while talking with a friend everything became dark and he thought he was going to faint. At the same time he had severe pain in the back of his neck and the left side of his head. Following the attack this pain was present intermittently until admission. For a few days after the onset of the pain he also complained of stiffness of his neck and of the calves of his legs. He was told by his doctor that he had a blood pressure of 230. The patient refused hospitalization at that time. He remained at home most of the time, was very apprehensive, and insisted that his wife be with him all the time. He complained of peculiar feelings and noises in his head. On the morning of admission he informed his wife that he was about to take an enema. Some time later she heard him call to her from the bathroom. She was sure that he did not fall down because she was in the next room and had heard no noise. When the patient was found he was lying on the floor unconscious, his body limp and his eyes set. A physician gave him a stimulant which revived him for a while. He then became very noisy and violent, but was finally quieted with a sedative. There is no history of any visual disturbance, fever, cough or pain in the chest during the three weeks preceding admission.

His mother died of cancer of the uterus, his father of angina. Two sisters were living and well. A third had died of pulmonary tuberculosis.

He had been married eighteen years. His wife and two children were living and well. There had been no miscarriages.

Ten years before admission he had been at a hospital where a diagnosis of gastric or duodenal ulcer was made. Operation was advised but was refused. Four years before admission at another hospital a diagnosis of gastric ulcer was made. He was put on a diet, but did not adhere to it very conscientiously. He had no severe bleeding.

Physical examination showed a thin semistuporous man. The left pupil was oval in shape. Both fundi showed redness and hazy disks. There was slight choking of the disks,

probably one diopter, and slight nicking of the veins, with some tortuosity of the vessels. There was some stiffness of the neck, not marked. The heart was not enlarged. The blood pressure was 202/120. When a Kernig test was attempted he complained of pain in his hamstrings. He was clear mentally, but his memory for recent events was poor. He was quite irritable and very noisy. He had difficulty in choosing words and sometimes used the wrong word to express himself. There were no uncinate attacks. Examination of all his cranial nerves was negative. His reflexes were all active on both sides. There was a slightly positive Kernig on both sides. The biceps, triceps and knee jerks were slightly hyperactive. The Babinski was negative, but from his history it was said to have been positive on both sides one week before entry.

The temperature was 98.8°, the pulse 52, the respiratory rate 11.

Examination of the urine was negative. Examination of the blood showed a red cell count of 4,800,000. The hemoglobin was 75 per cent. The white cell count was 15,500, with 82 per cent polymorphonuclears. A Hinton test on the blood was negative. The blood sugar was 98 milligrams, the non-protein nitrogen 29.

A lumbar puncture showed grossly bloody fluid. Pulse and respiratory oscillations were normal. The initial pressure was 300, after removal of 5 cubic centimeters of fluid it went down very slowly to 245. The cell count showed 1,500,000 red blood cells and 1200 white blood cells. The fluid was xanthochromic in the centrifuged specimen. The Wassermann was negative. A second lumbar puncture done three days after the first showed grossly bloody fluid and an initial pressure of 120. About 8 cubic centimeters of fluid was removed, at which time the pressure was 60. A cell count showed 62,000 red blood cells and 600 white blood cells. The centrifuged specimen was definitely xanthochromic. The total protein was 126, the sugar 38.2, and the colloidal gold 111222100. A third lumbar puncture done three days later showed cloudy yellow fluid. The initial pressure was 280. After the removal of 16 cubic centimeters the pressure went down to 140. The cell count showed 1760 crenated red blood cells, 320 polymorphonuclears and 320 lymphocytes. An alcohol test was positive. The ammonium sulphate test was negative. The total protein was 101, the colloidal gold 0122210000. The centrifuged specimen showed a scanty red sediment with xanthochromic fluid above.

On his twelfth day in this hospital the patient suddenly cried out, complained of pain behind his left eye and lapsed into stupor. Examination showed stiffness of the left arm and leg and flaccidity on the right. The deep reflexes were symmetrical but very weak. Bilateral Babinski was present. The blood pressure, which had been about 180/120, was now

X-ray examination of the heart showed enlargement, the transverse diameter measuring 18.3 centimeters, 15 to the left and 3.3 to the right. The transverse diameter of the chest measured 30 centimeters. There was marked prominence of the left ventricle. The supracardiac shadow was considerably increased in the anteroposterior view. In the lateral view however the aorta appeared of normal size.

He was put on digitalis and got good diuresis. Nine days after admission his temperature rose to 103.2° and that evening to 104°. There was questionable slight dullness at the right base. He showed slight anorexia and the digitalis was omitted. The following day there were many dull moist râles at the right base, with coarse moist rhonchi. The sputum that morning was rusty and pneumococcus type II was obtained from it. X-ray examination of the chest at this time showed extensive mottled dullness involving the lower two thirds of the right lung field. The dullness was more intense in the midportion of the chest. The upper portion of the right lung field and the entire left lung field were clear. The patient two beds away had a type II pneumonia and it was believed that a cross infection had occurred. Two days after the onset of the rise in temperature he was given serum after a negative eye test and a questionable skin test. The first 5 cubic centimeters was given without reaction, but after 7 cubic centimeters of the 25 cubic centimeter dose was injected he felt weak and began to sweat. His pulse became poor and his blood pressure went down to 70/50. The injection was stopped. After ten drops of adrenalin his blood pressure rose to 130/90. He was desensitized without any reaction. He became slightly cyanotic and was put into an oxygen tent. His temperature remained elevated, reaching 104.2°. The day following the serum treatment his pulse became rather small rate 140 and he was moderately cyanotic. His white blood cell count which had been 20,900 at the onset of the pneumonia dropped to 4,000. His blood pressure steadily failed and he died that day, three days after the onset of the pneumonia.

DIFFERENTIAL DIAGNOSIS

DR. F. DENNETTE ADAMS. The history is one of cardiac failure of the congestive type beginning three years before the final break and gradually becoming worse. The cough was doubtless due to mild congestion of the lungs.

There are these possible etiologic factors: rheumatic, syphilitic and hypertensive-arteriosclerotic heart disease. There is nothing in the history pointing toward a rheumatic background and no murmurs are mentioned in the physical examination, so rheumatic disease can readily be excluded.

The cardiac break began at forty which is within the age zone of syphilitic heart failure.

Against the likelihood of this disease, however, is the interval of three years between the onset of the first symptoms and of the final break. The characteristic murmurs are also absent. The x-ray observation of widening of the arch would suggest syphilis, but the normal appearance in the lateral plate offsets the evidence obtained by the anteroposterior view.

The man had hypertension before he came into the hospital, with a pressure doubtless higher than the reading of 155/130 recorded at the time of admission, which was after the failure had become well advanced. It is safe to assume that we are dealing primarily with a case of hypertensive heart disease with failure.

Whether angina pectoris, coronary disease, or coronary occlusion was present it is impossible to determine from the facts given in the history. The chief complaint is recorded as pain in the chest of three weeks' duration, but the account given in the history of the present illness stresses shortness of breath and also a dull aching substernal pain aggravated by exercise. It is important to know more about the pain, its degree, type and character of onset, before any conclusions concerning coronary disease can justifiably be drawn.

The electrocardiogram in this instance is of little help. An electrocardiogram showing a low T wave, if taken shortly after admission, might point toward coronary change, but if taken two or three days later and presumably following digitalis therapy, the low or flattened T wave loses its value as a diagnostic aid.

Certainly the kidneys are not appreciably involved.

The abdominal swelling makes one suspicious of moderate ascites. Apparently the physician who performed the physical examination suspected the possibility of its presence, but the evidence is not convincing. It is likely that the feeling of distention of which the patient complained was caused by congestion of the liver, occurring fairly suddenly along with the other manifestations of the acute break. I do not believe that ascites is present.

The barrel chest suggests emphysema. Nothing is recorded about lung signs and nothing reported in the x-ray about emphysema. There is one other fact which also points toward this possibility, namely that the left side of the heart and the width of the arch were found greater by x-ray than by percussion. These are rather indirect bits of evidence, but of some significance nevertheless.

The acute infection must have been pneumonia, doubtless a cross infection from the other patient. We know that such occurrences are not rare. Here we have a splendid example of the need for isolation of pneumonia patients, an ideal procedure difficult to carry out in any general hospital. Bronchopneumonia is rare with type I or II pneumococcus, lobar pneumonia almost a certainty. The mottling seen by

General peritonitis
Emphysema, bilateral apical
Cervical rib, bilateral
Arteriosclerosis

PATHOLOGIC DISCUSSION

DR TRACY B. MALLORY The autopsy on this man showed outside the head two entirely unexpected findings. The final attack of coma and death may in fact have had nothing whatever to do with his cerebral pathology. You remember that far back in the past history he had had a diagnosis of ulcer of the stomach. That ulcer turned out to be in the duodenum rather than the stomach. It had perforated and he had a general peritonitis. That is of some interest in connection with Dr. Cushing's theory of the activation of stomach ulcers by certain brain lesions.

The other rather unusual finding of absolutely no significance in his illness was a bilateral emphysema of both apices of the lungs. This was very sharply localized, just at the apices, and on examining the thoracic cavity it was evident that the apices of the thoracic cavity were unusually high, probably due to bilateral cervical ribs. I made this cast of it. He had approximately three times as much lung above his clavicle as the average person, and the emphysema on each side was absolutely localized to that area. The bronchi leading to these areas were normal or slightly dilated, certainly not obstructed. The remainder of the lungs showed no emphysema whatever.

The cerebral findings come much closer to Dr. Putnam's prediction.

DR CHARLES S. KUBIK On examination, the brain showed only a moderate amount of blood in the subarachnoid space. On the inferior surface of the optic chiasm there was a mass one centimeter in diameter consisting of partly organized clotted blood which obviously had come from a ruptured aneurysm of the anterior communicating artery. This was a thin-walled affair about two millimeters in diameter. No aneurysms of any of the other cerebral arteries were found. There was a moderate degree of arteriosclerosis.

Aneurysms such as this, in or near the circle of Willis, are found in most cases of spontaneous subarachnoid hemorrhage. The subjects are usually young people without arteriosclerosis or hypertension and without history or other evidences of syphilis. The aneurysms, or a majority of them, are probably the result of a congenital defect in the muscularis. It is thought that infected emboli coming from an endocarditis may account for some of them. In the case before us the wall of the aneurysm was not sclerotic, and I should suppose that here too there was probably congenital weakness of the vessel wall, with hypertension as an additional factor.

DR MALLORY I neglected to mention that throughout the body there was a diffuse arteriolar sclerosis, which one would expect with a long-standing hypertension.

CASE 20172

PRESENTATION OF CASE

A forty-three year old French weaver entered complaining of pain in his chest of three weeks' duration.

A year and a half before admission he first noticed dyspnea and cough, worse on exertion. The dyspnea disappeared after a few weeks, but the cough still dragged on. He was comparatively well until three weeks before admission, when marked dyspnea on exertion appeared again. This was associated with cough and blood-stained sputum. He had one or two sharp attacks of orthopnea. He had to sleep on two pillows. He also experienced a dull aching substernal pain, aggravated by exercise. One week before admission he noticed swelling of his abdomen.

His family and marital histories are irrelevant.

Two months and a half before entry he had all his teeth removed.

Physical examination showed a well developed and nourished man propped up in bed. There was slight cyanosis of the lips. His chest was barrel shaped. The heart was markedly enlarged to the left, measuring 11.5 centimeters from the midsternal line in the fifth interspace. The supracardiac dullness measured six centimeters. The pulse was small, thready, and almost impossible to feel. The blood pressure was 155/130. There were râles at both bases. The liver edge was sharp, smooth, tender, and palpable four fingerbreadths below the costal margin. There was a large right scrotal hernia and a healed herniotomy scar on the left. There was slight fullness of the flanks with questionable shifting dullness and questionable fluid wave.

The temperature was 98.6°, the pulse 100. The respirations were 20.

Examination of the urine showed a specific gravity of 1.010 to 1.022 and a slight trace of albumin. The sediment showed occasional hyaline casts and a rare white blood cell. Examination of the blood showed a red cell count of 5,680,000 and a hemoglobin of 70 per cent. The white cell count was 8500, with 70 per cent polymorphonuclears. The stools were negative. Hinton and Wassermann tests were negative. The non-protein nitrogen was 33 milligrams. A phenolsulphonphthalein test showed 68 per cent secretion at the end of one hour, 33 per cent of which was excreted in the first fifteen minutes.

An electrocardiogram showed normal rhythm, rate 105, slightly widened Q R S waves, flat T₁ and T₂, and slight left axis deviation.

larger volume than 0.02 cc is introduced the initial elevation is, of course, correspondingly larger. In judging the test, it is important to note the behavior of the inoculated region at frequent intervals and to regard as a positive reaction the rapid transformation of the small white elevation into a genuine urticarial wheal with a surrounding zone of erythema. The result of the skin test in this patient is probably negative.

The results of the skin test with normal horse serum diluted 1:10 with normal saline are difficult to judge on account of the occurrence of doubtful reactions and this difficulty is enhanced with Felton's antibody diluted 1:10 with 1.5 per cent salt solution. Confusing results with skin tests have led to the substitution of the less delicate ophthalmic test, but it is undesirable, I think, to abandon the skin test entirely and it is well for us to continue to use it here as an additional safeguard in connection with the history and the ophthalmic test.

Patients with obviously positive skin tests should not, I think, be treated with antipneumococcic serum. In patients with histories negative for hypersensitiveness and negative ophthalmic tests, but with doubtful skin tests it is safer to proceed cautiously, starting with very small doses subcutaneously, i.e., from 0.005 to 0.025 cc and doubling the dose every half hour until 1.0 cc is given. Following this, 0.1 cc diluted with normal saline may be given intravenously and the intravenous dose doubled every half hour until the required amount is given.

It is stated that the patient had sweating, weakness and low blood pressure after the injection of serum. In our experience about ten per cent of serum-treated patients have had a transient complex of symptoms usually immediately after the first dose including some shortness of breath, cyanosis, rapidity of the pulse, thoracic oppression and apprehension and I would not regard the reaction this patient had as dangerous. It is not unusual to have a low blood pressure at the inception of a severe acute infection. I myself, when I had lobar pneumonia, had a blood pressure of 90/60 for the first twenty-four to thirty-six hours. It is not necessary to stop the use of serum under these circumstances. The subsequent injection of 45.0 cc without trouble in this patient supports this point of view.

With respect to the merits of antipneumococcus serum in the treatment of type II pneumococcus pneumonia, analysis of the available evidence indicates that the usual mortality of type II is about 40 per cent and that serum has reduced the mortality to 30 per cent, and in early treated patients it is fair to assume that that mortality might be reduced to below 30 per cent. In the State project there have been eighty-four patients treated within the first four days of the illness with twenty-four deaths, a mortality of twenty-nine per cent.

DR. PAUL D. WHITE: I think that Dr. Adams has covered very well the cardiac side of the case and the rest of it too. The difficulty of determining clearly whether there was coronary disease from the history given is great. One would want a much more adequate story than Dr. Adams had to work on.

DR. MALLORY: Do you think the presence of cardiac decompensation influenced the reaction to the serum in any way?

DR. WHITE: I do not know. I suppose that anyone who has been through such an illness (congestive failure) as this patient had would be much less likely to recover from a second illness such as pneumonia.

DR. J. H. MEANS: I wanted to ask Dr. Lord much the same question,—whether in the face of congestive failure, such as this man had, it was desirable to give serum at all, or whether cardiac failure constitutes a contraindication?

DR. LORD: I would not say it constituted a contraindication in this case, as it is difficult to judge from the description just how ill this patient was. Estimate of the seriousness of illness depends largely on the aspect of the patient and is difficult to put into writing. I would in general say, however, that I think that patients who are already desperately ill and in extremis should not be treated with antiserum. The question then may quite naturally be raised whether statistical studies based on serum-treated cases with the exclusion of the desperately ill compared with a control group not so treated are reliable. In answer to that I would say that observation of this precaution would inevitably introduce a source of error into the figures when no account was taken of the day of the disease in which serum treatment was begun. But the mortality of cases treated with serum within the first few days of the illness is probably not modified to any significant degree, because patients with pneumonia are rarely desperately ill during this early period.

DR. ADAMS: May I add one statement? It seems to me in connection with the changes during the serum reaction that the significant fact is not that the blood pressure dropped to 70/50 but that it dropped from 150/130 down to 70/50. Such a change, particularly in the diastolic figure, is certainly an indication of marked vasomotor upset.

DR. ALFRED KRANES: The blood pressure was not taken immediately before the serum was given. That reading, 150/130, was the admission blood pressure.

DR. ADAMS: I think it is safe to assume that if the pressure was 150/130 when he was admitted and if he improved under treatment, his blood pressure probably did not go down until after the onset of the pneumonia, and that even then it would not have failed so appreciably during the early stages of this complication. One associates such a fall with the final stages of the disease.

x-ray is not at all inconsistent with the early stages. Whether he had involvement of the lower lobe or of the lower and middle lobes is difficult to decide. The fact that the greatest density by x-ray was in midchest points toward middle lobe rather than lower lobe, although nothing is recorded concerning the straight, clean-cut line which is usually seen by x-ray with middle lobe consolidation.

I admire the courage but question the wisdom of those who continued to give serum after they had encountered trouble once. I have no desire to appear too critical or too much of a reactionary, but I think I am justified in making the statement that type II serum has by no means been universally accepted as a therapeutic agent of proved merit, and that discontinuance of its administration after one severe serum reaction might have been a wiser course. We do not know that such a serum reaction does not have a detrimental effect on the patient in spite of recovery from the immediate symptoms. On the other hand, there are two sides to the problem, and those who have faith in the efficacy of type II serum therapy are justified in using it. Had the pneumonia been of type I origin the problem would have been different, for type I serum administered early is generally accepted as a therapeutic agent of some value. But it is none the less my conviction that some of the enthusiasm for serum therapy is not justified by any results which have thus far been demonstrated in connection with its use, and that its disadvantages are being minimized while its advantages are sometimes overstressed.

I should be interested to know if the patient had a positive blood culture. I always expect it in a sick pneumonia patient with a low white cell count.

DR. TRACY B. MALLORY: There were no positive cultures during life.

DR. ADAMS: My diagnoses in this case are Hypertensive and arteriosclerotic heart disease with congestive failure.

Possible coronary disease.

Lobar pneumonia of the right lower lobe, possibly of the right middle lobe.

Possible pneumococcus septicemia.

CLINICAL DISCUSSION

DR. FREDERICK T. LORD: There seems little question in respect to the nature of his pneumonic process, and I would agree that the finding of type II in the sputum in a patient with a complex of symptoms consistent with pneumonia is almost certain evidence of lobar pneumonia.

With respect to contagion, in Smilie's epidemiologic studies he finds that Types I and II pneumococci occur in family contacts in a percentage of about twenty per cent, but it is by no means certain how pneumonia arises under such circumstances. The frequency with which lobar

pneumonia is preceded by a "cold" is perhaps significant in this connection, and it may be that there is a relationship between the filtrable virus concerned in the etiology of the "cold" and the pneumococci which cause pneumonia. Dochez's studies on the acute infections of the respiratory tract suggest that the filtrable virus which initiates the primary infection promotes secondary bacterial infection and the spread of the secondary invaders to contacts. In Smilie's studies contact alone does not seem an adequate explanation and the large proportion of those suffering from acute "colds" among carriers of homologous pneumococci in family contacts suggests that family epidemics of "colds" may determine the transfer of types I and II pneumococci from infected to uninfected individuals.

Smilie's findings suggest that there is little danger of contagion among patients or the staff in hospitals. The incidence of homologous pneumococci among contacts in hospitals is about two per cent in contrast to about twenty per cent in family contacts. The presence of a patient with type II pneumococcus pneumonia two beds away from this patient is hardly enough to prove contagion from one to the other, although, of course, one cannot deny it.

There is one aspect of this case especially deserving of comment, and that is that the pneumonia developed under observation in the hospital, and this affords an unusual opportunity to note the behavior of the temperature. In a few instances in which a type I or type II pneumococcus pneumonia has developed under such circumstances there has been a very rapid elevation of temperature from normal to its maximum within the space of only a few hours, and in this patient the temperature rose from normal to 103° within a period of about four hours. In addition, the patient had a cough and bloody sputum, but the initial manifestations were atypical in the absence of chill and stitch in the side. An explosive onset and the grouping of initial symptoms are usually sufficient to suggest lobar pneumonia, but atypical features here and the presence of cardiac disease probably made the early diagnosis uncertain. An unusual opportunity is, of course, afforded for early treatment under these circumstances, and yet the diagnosis of type was not made until the day after the onset and serum was not given until the following day. This seems an unjustifiable delay if we plan to treat type II pneumococcus pneumonia with serum.

Another aspect of this problem is the result of the tests for hypersensitiveness to horse serum. The ophthalmic test was negative, but on the application of the intradermal skin test there was a wheal one centimeter in diameter without surrounding erythema. The introduction of 0.02 cc of a 1:10 dilution of normal horse serum into the skin produces a white elevation only a few millimeters in diameter. If a

The New England Journal of Medicine

SUCCESSOR TO

THE BOSTON MEDICAL AND SURGICAL JOURNAL

Established in 1828

Published by THE MASSACHUSETTS MEDICAL SOCIETY
under the jurisdiction of the

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SUBSCRIPTION TERMS \$6.00 per year in advance postage paid
for the United States, Canada \$7.00 per year \$8.50 per year
for all foreign countries belonging to the Postal Union.

Material for early publication should be received not later
than noon on Saturday. Orders for reprints must be sent to
the Journal office 3 The Fenway.

The Journal does not hold itself responsible for statements
made by any contributor.

Communications should be addressed to The New England
Journal of Medicine 3 The Fenway Boston Mass.

AUTONOMIC REPRESENTATION IN THE CEREBRUM

It has long been recognized, since the time of Rokitsansky, that the gastro-intestinal tract may be modified pathologically by lesions in the brain. Ulcerations, particularly of the stomach, have occurred in a sufficient number of cases of brain tumor to lead to a neurogenic conception of peptic ulcer. At first the responsibility for this process was placed upon the peripheral vagus nerve, later it was thought the center might be in the medulla, then in the mid-brain, and finally it is now recognized by Cushing and others that a lesion of the interbrain may lead to erosions and even acute perforations of the esophagus, stomach or duodenum. It would seem at this level, at least, that there is a station for vegetative impulses that are easily affected by psychic influences, and although this theory, mainly put forward in recent years by Cushing, does not, perhaps, account for all ul-

cerative processes, it appears to be a reasonable explanation for the majority of them.*

The work which has led to these conclusions has been partly from the clinic and partly from the physiological laboratories. From the latter source a new conception of one of the causative factors in another intestinal disorder, namely, intussusception is discussed in this issue of the *Journal*†. The work has been done in a large series of monkeys in which the motility of the gastro-intestinal tract has been studied in relation to various operations on the cerebral cortex. The area of the brain operation, which was followed by spontaneous intussusception and death in three otherwise healthy monkeys, was a small region in front of the motor cortex now referred to as the "premotor area." This region appears to contain autonomic representation for the gastro-intestinal tract and probably includes both excitatory and inhibitory components.

The work referred to above, on intussusception, is another step in advance in the neurogenic theory of gastro-intestinal disease, the clinical implications of which must be considered as far-reaching. Intussusception in children is by no means a unique disease and is, in most cases, a dangerous cause of intestinal obstruction. If it is sometimes due to cortical dysfunction, as indicated by animal experimentation, a new conception of the subject is at once presented which should lead to further investigation of this important topic.

*Cushing, Harvey. Papers Relating to the Pituitary Body, Hypothalamus and Parasympathetic Nervous System. Part IV. Peptic Ulcer and the Interbrain. Springfield Ill. & Baltimore Md. Charles C. Thomas, 1932.

†Watts, James W. and Fulton, John F. Intussusception—The Relation of the Cerebral Cortex to Intestinal Motility in the Monkey. Page 553.

THE USES OF ADVERSITY

WHEN the Senior Duke of Burgundy, self-exiled in the Forest of Arden, remarked that the uses of adversity are sweet, he was probably using "uses" in its Elizabethan sense of customs or practices. It is not so much the advantages or benefits which men may derive from adversity which are valuable, as the activities and occupations to which they turn, neglected in the piping times of prosperity. Thus, "as from the nettle danger we pluck the flower safely," so from the toad of adversity "ugly and venomous," we may pluck the precious jewel which he is fabled to wear in his head, and which is proof against all other poisons. The modern parallel of this parable of the Duke's is the spirited strip in one of our esteemed and familiar comic contemporaries, entitled, "What to do with the Wolf at the Door."

In common with all his fellow men in this America of the past four years, the doctor has come in for his share of adversity, though no mention has yet been made of any code for his

CLINICAL DIAGNOSES

Hypertensive heart disease
Arteriosclerosis
Lobar pneumonia, right middle lobe
Right scrotal hernia

ANATOMIC DIAGNOSES

Lobar pneumonia, right upper lobe
Septicemia, pneumococcus
Acute fibrinous pleuritis with effusion, slight
Hydropneumothorax, slight
Cardiac hypertrophy, hypertensive type
Chronic vascular nephritis, early
Adrenal adenoma

PATHOLOGIC DISCUSSION

DR. MALLORY On the epidemiologic side of the case, we see a considerable number of decompensated cardiacs who pick up in the last few days of their illness an acute bronchitis and sometimes a moderate degree of bronchopneumonia, usually type IV pneumococcus or

streptococcus. We do not very often see a true lobar pneumonia as a terminal incident in heart disease. Do you agree with me, Dr. White?

DR. WHITE Yes

DR. MALLORY So that the appearance of a type II lobar pneumonia must be considered an unusual event in a case of this sort. The fact that the patient in the next bed but one was suffering from the same disease is suggestive, but of course is not proof of contagion.

The autopsy showed entirely what was predicted except for the location of the pneumonia, which was in the upper lobe and not in the lower. Otherwise everything was as we expected.

DR. WHITE How much did the heart weigh?

DR. MALLORY Five hundred grams. The coronary arteries were entirely negative. The kidneys were practically normal in size. There is no question but that it was a pure hypertensive heart disease.

A PHYSICIAN Was there any emphysema?

DR. MALLORY No significant degree of it.

Massachusetts General Hospital His personality has endeared him to colleagues and patients alike

Boston and the Massachusetts General Hospital will regret his transfer to New York, but are glad that he has been offered this larger opportunity, and feel sure that he will repeat, on a greater scale, the success which he has attained in New England

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MASSACHUSETTS LEGISLATIVE NOTES

THE VETO OF HOUSE BILL NO 1305*

The Governor vetoed House Bill 1305 which was designed to authorize the University of Massachusetts Incorporated to grant the Degree of Bachelor of Science The argument of His Excellency is so cogent that we submit it in full as follows

The Commonwealth of Massachusetts Executive Department Boston Massachusetts March 19 1934 To the Honorable Senate and House of Representatives

I am returning without my approval House Bill 1305 entitled An Act authorizing the University of Massachusetts Incorporated to grant the Degree of Bachelor of Science To recognize this university as eligible to grant the degree of Bachelor of Science holds out to the general public that courses of instruction are given the successful pursuit of which results in a graduate having attained the same scholastic standing as a graduate from the other Massachusetts institutions now granting the degree As a matter of fact there is no course of instruction at the University of Massachusetts Incorporated which furnishes the same instruction received by the recipient of a degree of Bachelor of Science graduating from any of the other institutions of learning now granting the degree This Commonwealth is asked to permit the awarding of a degree of Bachelor of Science in order that the University of Massachusetts Incorporated may set up a course of study in accordance with the recognized educational standards for the degree In other words Massachusetts is asked to grant the degree on faith that the institution will conform to recognized standards and, in my opinion the authority to grant degrees should not be conferred in that manner In any event an analysis of the assets educational and otherwise of this institution do (sic) not give sufficient assurance of a maintenance of the high standard which this degree requires to warrant

The record of the veto is as it appears in House Bill 1305

relief Happily, like his professional brethren the clergyman and the teacher, he is above the need of a code, or rather he has a code of his own which should fortify him against misfortune and afford ample occupational, if not financial, compensation for the unemployment which the chance of the times may have brought

The average doctor during the period of so-called depression has seen his practice and income diminish from three principal causes. First, many patients who otherwise would have consulted him, being now so reduced in material circumstances that they cannot afford to do so, go instead to free public clinics, where they obtain excellent advice, care, and service at little or no cost. The enormous recent growth in the clientele of public medical charitable institutions is evidence of this. Secondly, many of those patients who still consult their private physician rightly expect and demand that his fees shall be much lower than those which they paid willingly a decade ago. Thirdly, many patients fail to pay even the modest fees which the doctor charges, so that his collections fall far below the total of reduced bills which he renders. Thus the average doctor is left wondering how he shall meet his overhead, support his family, educate his children and pay the increased tax on his diminished income.

It is not our present purpose, even were we able to do so, to suggest means of meeting these problems. Rather we would turn attention to some of the "uses of adversity," some of the ways in which the doctor, after solving these problems for himself as best he can, may find occupational advantage for the increased leisure brought him by unemployment.

First, and highest of all, is the privilege which the doctor always enjoys of using his professional knowledge and skill for human service without thought of monetary return. It is the actual exercise of his craft, after all, which affords his greatest satisfaction, his beneficent contact with fellow beings which earns their gratitude and his own happiness.

Secondly, the doctor may find absorbing occupation for leisure, not professionally employed, in his own home and family, if he be fortunate enough to have them. It is characteristic of Americans that they must always go abroad for pleasure and relaxation. It was a successful calamity which first taught the ruined banker to appreciate his own wife and children. So the doctor, formerly so busy that he was never at home, may now learn to enjoy the companionship of his family, to discover what delightful people they really are, to become absorbed in studying astronomy or carpentering with John, in helping Mary with her French or history or music, or even to get out his long disused violin and join the family quartet, though it be as second fiddle. There are always plenty of domestic repair jobs which he can undertake

to the joy of his superior four fifths, and to which he can apply the intelligence and mechanical ingenuity which he has acquired in the fields of science. And in his garden, the original habitat and pleasure ground of the human race, he may find at once, healthful physical labor, aesthetic satisfaction, and perhaps even valuable supplement in produce to the *res angustae domi*.

Finally, it is in the study or by the fireside, that the doctor may find best occupation for his new-won leisure of adversity in reading, marking, and digesting inwardly, not only the medical journalism with which he always feels it his business to keep up, but also the better general literature which he usually neglects. One of the faults of our previously plethoric lives has been that we have let most of our books "rust unused," or rather unperused, on our shelves, so that we have been more familiar with their bindings than their contents. Either Cicero or Pliny, in one of his letters of advice to a young man, wisely and somewhat paradoxically remarks, "It is more important to read the books you own than to own the books you read." This is now the doctor's opportunity, to read the books he owns and thereby make them really his. In this respect our ancestors, with their scanty but well-read libraries, were often better off than we, with our unregarded abundance.

Perhaps we may venture farther hereafter on the subject of the doctor's library. For the present, suffice these suggestions as to some of the uses of adversity which he may find sweeter than at first he is ready to suspect. After all, most of our afflictions generally turn out to be disguised blessings which we have entertained unaware, and inexpensive pleasures prove often the most precious. If he doubt this, let the doctor turn his unoccupied hours to those studies which are at once, "the adornment of prosperity, the solace and refuge of adversity."

DOCTOR WILSON GOES TO NEW YORK

It is always gratifying to know that what we have is desired by others, but not so pleasing when we lose our most valued possessions to them. So it is with the acceptance by Dr. Philip Wilson of the position of Surgeon-in-Chief of the Hospital for Ruptured and Crippled in New York City.

In Boston, Doctor Wilson has made for himself an enviable reputation. With Doctor Cochrane, he has published a textbook on "Fractures and Dislocations" and he is the author of the section on Amputations in the Oxford System of Surgery. He has had the honor of being president of the newly formed American Academy of Orthopedic Surgery. He is an inspiring teacher and has been a productive and skillful member of the Orthopedic Department at the

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The record of the veto is as it appears in House Bill 1335

the presumption that such standards will be attained if the degree is permitted.

It may be argued that there is an inconsistency in permitting the Staley College of the Spoken Word to grant a degree of Bachelor of Science of Oratory, but this school has for years conducted a course which, in my opinion, entitles it without change of its curriculum to the reward which the State has imposed upon the earnest efforts of the leaders of that institution, while in the instance of this bill, the University of Massachusetts Incorporated has not yet brought its requirements to the customary standards for the granting of a degree of Bachelor of Science. Furthermore, the degree of Bachelor of Science is granted upon an established standard which has been fundamental to it for a long period of time, while the somewhat newer degree of Bachelor of Science of Oratory has not yet the public recognition of scholarship which the degree provided in this bill holds forth.

There is perhaps a more fundamental difficulty with the bill. The name "Massachusetts" has acquired a standard in matters of education recognized throughout the United States and the world. Its use in the conferring of degrees cannot be permitted except in the absence of doubt as to the ability of the institution to meet such educational standard. The Commonwealth itself sustains an educational institution under the name of the Massachusetts State College which, in the course of time, holds the possibility of developing into a university. This is a precious name which in educational matters should be held as the proud possession of the State itself. It should not be appropriated by any private group, however conscientious the intentions of the group may be, which is without endowment or such considerable public support as to guarantee that the institution will maintain the high scholastic standards which the name and the other institutions of the State represent. The title of Massachusetts University properly belongs to the people of the Commonwealth.

For these reasons I am returning the bill without my approval.

JOSEPH B. ELY

H 118 was submitted by the Board of Registration in Medicine, and the argument in favor of it was published on page 795 of the issue of April 12, 1934. The action of the Legislature is that "no legislation is necessary." This is an indication that the General Court is not interested in raising the standards of medical practice in Massachusetts. This Commonwealth continues to occupy the unenviable distinction of maintaining the lowest standards relating to medical education in this country. We have been admonished to "have faith in Massachusetts" without a time limit.

MISCELLANY

A SAFETY CONFERENCE

Under the auspices of the Massachusetts Safety Council and Coöperating Organizations, invitations have been issued to attend the First New England Safety Conference and the thirteenth Annual Massachusetts Safety Conference to be held in the Hotel Statler, April 30, and May 1, 1934.

Practically all of the unnecessary hazards to life and health will be dealt with.

The Safety Exhibit will be interesting, and Section 6 on occupational diseases is especially important.

In each of the fourteen sections, matters which concern the medical profession will be discussed. A visit to the Hotel Statler and a study of the program will be worthwhile.

RECENT DEATH

BOUVIER—JOSEPH PETER BOUVIER, M.D., of Whitinsville, Massachusetts, died April 2, 1934 in a Woonsocket, R. I., Hospital, of coronary thrombosis. He was born in La Presentation, P. Q., Canada, on July 16, 1880, the son of Michael and Eleanor (Savage) Bouvier.

His premedical education was received at St. Hyacinth Seminary, Montreal, and he acquired his M.D. degree from Laval University, Montreal, June, 1905, and settled in Whitinsville, Massachusetts, in 1905. He joined the Massachusetts Medical Society through the Worcester District Society in 1930, and was a Fellow of the American Medical Association. He is survived by his widow, Mrs. Eva (Ledoux) Bouvier, and four children, Gabrielle, Simmone, John and Phillip.

REPORTS AND NOTICES OF MEETINGS

BOSTON HEALTH LEAGUE

THE ANNUAL MEETING

On the evening of April 12, 1934 the Annual Meeting of the Boston Health League was held in the rooms of the Twentieth Century Club, 3 Joy Street, Boston. After dinner, the League was called to order by the President, Dr. John W. Bartol, and the following reports were submitted:

REPORT OF EXECUTIVE SECRETARY

During the year 1933 the country again has experienced low mortality and morbidity rates, but these rates are necessarily based on estimates of the population, and these estimates, in turn, are based on the assumption that the annual increment to the population since the census enumeration of 1930 was the same as that prevailing during the decennial 1920-1930. The latter assumption, however, is open to challenge. Should our population estimates be considerably higher than the true population, all

our calculated rates as now shown are lower than they really are."* The Children's Bureau reports that indications of undernourishment in school children are being received from some parts of the country. Dr Kleinschmidt of the National Tuberculosis Association has likened our favorable health reports to the free wheeling of an automobile due to the accumulation of years of work, but he warns us that we cannot roll indefinitely upon this reserve and urges that all health programs be strengthened in order to combat effectively accumulative effects of continued privation which may have serious effects, if every possible effort is not made to offset the depression with sound health program.

COST OF MEDICAL CARE

At the Annual Meeting of the Corporation on March 9, 1933 Dr Richard M. Smith presented the final report of the Committee on the Costs of Medical Care. Drs Washburn, Lee, Bigelow, Wilinsky and Bowers discussed briefly the report and it was voted that The Executive Committee of the League be directed to consider how it can best serve the interest of the community at this time with regard to the problems connected with the cost of medical care and that it take such steps during the coming year as may seem in its judgment to be wise.

In June at the request of the Hospital Superintendents Club the Health League called a meeting for discussion of a plan for prepaid hospitalization, which was attended by hospital superintendents, members of the staff and members of the boards of trustees of the hospitals of Greater Boston. Beyond affording opportunity for discussion of the plan, the League has taken no participation in the project up to the present time, but is awaiting further developments before taking action.

CHILD HEALTH RECOVERY

The only other meeting of the Corporation during the year was a luncheon in October when Dr Richard M. Smith and Dr M. Luise Diez reported on the Child Health Recovery Conference called early in October in Washington by Miss Abbott of the Children's Bureau. It was suggested that any plan undertaken in the State should be a permanent one and that examinations should be directed toward the control of all aspects of child health and not merely the detection of children requiring relief because of undernutrition.

DENTAL CARE

During 1933 one of the chief concerns of the Health League has been the lack of adequate facilities for free dental care for adults. The eleven dental clinics in ten hospitals or dispensaries and one settlement house reported that during a year less than ten thousand persons received dental care and this number included children and non residents of Boston. With more than thirty thousand families receiving Overseer's Aid and only 12 1/2 per cent of the total population (781,188 in 1930) under twelve

years of age it is clear that these existing facilities are wholly inadequate. A committee composed of representatives of the Metropolitan District of the Massachusetts Dental Society and the Health League considered the situation carefully and a small demonstration has been started for patients able to pay a part of the regular dental fee. These patients are referred by one agency to members of the Metropolitan District of the Massachusetts Dental Society who have signified their willingness to do this work on a reduced fee schedule. The Committee realizes that this demonstration in no way meets the demand for more free dental work and the problem is still receiving careful consideration.

PNEUMONIA

Because the death rate from lobar pneumonia is rather high in Boston the Metropolitan Life Insurance Company asked the Health League to sponsor an effort to reduce this mortality. The Health League appointed a medical advisory committee of which Dr Frederick T. Lord is chairman and this committee published a brief article in the *New England Journal of Medicine* asking that physicians report cases promptly to the Health Department and that they avail themselves of the Community Health Association nursing service, if the patient cannot afford a private duty nurse. A letter was sent to each member of Norfolk, Suffolk and Middlesex South Medical Societies, who was practicing within the city limits calling attention to this article, a reprint of which was enclosed.

CANCER

The Cancer Committee, during the year has undertaken three definite types of educational lecture work. With the hope of building up informed public opinion a lecture on the biology of cancer was offered to the colleges of Boston, and was given at Simmons College and the Massachusetts College of Pharmacy, and in both places the students were much interested. Eight lectures were given before mothers' clubs in the settlement houses. The third group to be reached was the nurses at the State Convention in October when the committee arranged to have Dr Jackson speak and asked the State Health Department to provide an exhibit on cancer.

One cancer bulletin was published during the year. The leading article was by Clarence Cook Little, Managing Director of the American Society for the Control of Cancer and was entitled *Biology of Cancer*.

SOCIAL HYGIENE

This committee has continued the sponsoring of the Staff Council on Syphilis and Gonorrhea and coöperates with the Massachusetts Society for Social Hygiene in the Boston aspects in a study of social hygiene instruction in the educational system and a proposed institute for nurses.

This committee, at the request of the Committee on the Needs of Ward 9 arranged for a conference with a group of Negro social and church workers,

when Dr Nels A. Nelson, of the Massachusetts State Department of Health, gave an admirable talk on "The Social Significance of Syphilis and Gonorrhea."

SUMMER CAMPS

The committee this year outlined a well rounded daily camp routine emphasizing the necessity for sufficient rest. This routine was adopted by the Division of Tuberculosis of the State Health Department and the Massachusetts Tuberculosis League as a standard for the health camps of Massachusetts. The pamphlet was distributed to about 350 persons who are connected with camps, either in the management or in placing children in camps.

USE OF HEALTH MATERIAL

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The Executive Secretary was also asked to present the tuberculosis graphs at a joint meeting of the Executive Committee and the Health Education Committee of the Boston Tuberculosis Association, and to speak on health trends in Boston at one of the monthly meetings of the settlement house group.

HOSPITAL GUIDE

In order to supplement the information on file regarding hospital beds and clinical facilities in Boston, in November a "Guide for Social Workers wishing to Secure Free Hospital Care for Clients" was sent to the health and social agencies, who are members of the Boston Health League or the Boston Council of Social Agencies. Many agencies have asked for additional copies and the Guide seems to be helpful in clarifying present policies.

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The Health League, in common with all private agencies, was forced to reduce expenditures during the year, but we are grateful for the loyal support of individual subscribers who designated our agency in the Boston Emergency Relief Campaign of 1933 and to the charitable foundations who have made it possible for us to continue our work without curtailing of activities. This review indicates the many topics in which the League has been interested, and to some extent, we hope, the close relationship between the private and public agencies in joint planning. The Executive Secretary wishes to express her gratitude to the Executive Committee, the many special committees of the Health League, and the public and private agencies without whose help it would have been impossible to carry on such a diversified program with so limited a budget.

MARGARET H. TRACY, *Executive Secretary*,
Boston Health League.

REPORT OF THE TREASURER

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At the close of the business meeting Dr. Bartol introduced Dr. Kendall Emerson, Executive Secretary of the American Public Health Association, who delivered an instructive and stimulating address on the "Essential Public Health Services" which will be published in a subsequent issue of this *Journal*.

The paper was discussed by Dr. Henry D. Chadwick, Massachusetts State Commissioner of Public Health.

THE CUTTER LECTURE ON PREVENTIVE MEDICINE

The Cutter Lecture on Preventive Medicine for this year was given on Friday, March 16, at 5 00 P.M. in Building E of the Harvard Medical School by Dr. Karl Landsteiner, member of the Rockefeller Institute in New York City. His subject was "Immunochemical Specificity."

The speaker was introduced by Dr. Milton J. Rosenau of the Department of Preventive Medicine at the Harvard Medical School. Dr. Landsteiner's pioneer work on the antigen-antibody relationship and his discovery of the human blood groups were briefly mentioned.

After a brief historical survey of the work on the specificity of antigens, especially the proteins, Dr. Landsteiner discussed the methods now being used at the Rockefeller Institute. With the development of the inhibition reaction they have been able to test in detail the immunological specificity of various modified antigens, especially the azo-proteins. The reactions have been found to be the more specific with increasing chain length of the particular modifying group under investigation. Small differences in chemical structure, however, have been shown to produce striking differences in serological reaction. It has even been possible to distinguish *cis-trans* isomerism such as in maleic and fumaric acids. Considerable work is being done at the present time on the specificity of the antigenic reactions of protein split products, albumoses and proteoses.

Dr. Landsteiner next discussed cellular antigens from the chemical point of view. The significance of the bacterial carbohydrate fractions, as in the pneumococcus, was considered. Carbohydrate as an antigen is probably of importance in tissue cells as well as in bacteria. There is hardly any question but that carbohydrate is capable of arousing immune processes without the aid of protein. The immunizing action of lipoids, however, such as the lecithins, is still very doubtful.

In conclusion, the mechanism of antibody formation was very briefly considered and Dr. Landsteiner compared the process with that involved in the formation of a large complex molecule, like a protein molecule.

THE STAMFORD (CONN.) MEDICAL SOCIETY

The Stamford Medical Society held its monthly meeting at the Stamford Hall Sanitarium on Tuesday evening, April 17. Dr. Graeme M. Hammond of New York City read a paper on 'Suggestions in the Treatment of Epilepsy' and Dr. William P. Healy presented a paper on 'Precancerous Lesions of the Vulva and Cervix' illustrated with slides.

Dr. Frank W. Robertson, Medical Director of Stamford Hall, extended greetings to the members of the Society. Dr. Frank C. McMahon, President of The Stamford Medical Society, presided.

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BOSTON MEDICAL HISTORY CLUB

The annual meeting of the Boston Medical History Club was held at the Boston Medical Library on Monday evening, April 16. Dr. Merrill Moore read a short paper on Ulrich von Hutten and Neurosyphilis and Dr. Ralph C. Larrabee gave a very interesting talk on the attempted ascent of Mt. Washington by Dr. Ball, a Fellow of the Massachusetts Medical Society, in October 1855. Dr. Ball was lost for three days in a very severe storm with his trusty umbrella as his sole companion and lived to tell the tale in his little book entitled *The Perilous Adventure of Dr. Ball*.

Dr. Larrabee is an authority on the White Mountains and trail expert of the Appalachian Mountain Club and in 1931 with two companions identified and mapped out the trail of Dr. Ball in his hazardous adventure. This party named the highest point reached by Dr. Ball as Ball's Crag with the hope that it may perpetuate his experience. Dr. Larrabee gave a very graphic account of the perils of the much underestimated Mt. Washington and illustrated his talk with a large number of stereopticon slides.

The annual report of the Secretary-Treasurer showed a balance of \$240.79 after all bills for 1933-34 had been paid, and an active membership of 109. In his report, he called attention to the outstanding programs furnished during the year.

The season began in November 1933 with the third Medical Historical Pageant by students of Tufts College Medical School under the direction of Dr. Benjamin Spector. In December Professor Norman E. Himes of Colgate University read an important paper on the 'Medical History of Contraception' which was published in the *New England Journal of Medicine*, March 15, 1934. In January of this year, Dr. Henry E. Sigerist, Director of the Institute of the History of Medicine at Johns Hopkins University, gave an informal talk on his trip to Italy in 1933 in search of medieval medical manuscripts. His paper has been published in the *Bulletin of the Institute of the History of Medicine*, March 1934. In February, Dr. Francis T. Hunter read a paper on "Mummification" and exhibited x-rays of all the mummies in the Boston Museum of Fine Arts. The March meeting was given over to a symposium on Jewish Medicine based on the manuscripts and books in the "Solomon M. Hyams Collection" and April was reserved for Dr. R. C. Larrabee's very interesting talk on Mt. Washington.

The Secretary commented on the general excellence of the complete program and said that it would be very difficult to duplicate it during the coming year. However, the fourth pageant is assured for November and three very good main papers have been promised for the season of 1934-35 which cares for four of the six regular meetings.

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Dr Charles F Painter, Chairman of the Nominating Committee, proposed the following names for officers for 1934-35 and all were duly elected

President Henry R. Viets, M.D.

Vice-Presidents Lincoln Davis, M.D., Hyman Morrison, M.D., Harold Bowditch, M.D.

Secretary-Treasurer James F. Ballard.

Council John W. Bartol, M.D., Wm H. Robey, M.D., Fred B. Lund, M.D.

HARVARD MEDICAL SOCIETY

The Harvard Medical Society met in the amphitheatre of the Peter Bent Brigham Hospital on Tuesday evening, April 10. Dr L. Stanley Davidson, Professor of Medicine at the University of Aberdeen, spoke on the Incidence, Etiology, and Treatment of Nutritional Anemia.

The meeting was opened with the presentation of two cases of anemia. The first was a boy, 12 years old, who entered the hospital with the history of an enlarged spleen at the age of five. Since last December he had felt ill and complained of a chronic cough. His mother had spent some time in a tuberculosis sanitarium, but had later been discharged "as not having tuberculosis." The boy tired easily, had a temperature of 102° F., had passed dark colored stools, and had had a gross hematemesis on two occasions. He was, on examination, pale with a rectal temperature of 101° and a pulse of 130. In the midscapular regions there were fine râles on inspiration, and the base of the right lung was flat. A mass in the left upper quadrant extending to the umbilicus suggested an enlarged spleen. Blood examination showed a severe anemia with a hemoglobin of 30 per cent and marked achromia of the red cells. The stools contained occult blood. Pleural effusion was present and the fluid contained 2800 polymorphonuclear cells, 350 lymphocytes, and 350 red blood cells per cubic millimeter, but no tubercle bacilli could be demonstrated. By x-ray there were coarse mottlings of both lung bases. In discussing this case, Dr. Murphy suggested the diagnosis of tuberculosis of the spleen with involvement of the bone marrow. Drs. Minot and Sisson, however, felt that the long duration ruled out this diagnosis and that Banti's disease was more likely.

The second case was that of a woman of 48 years of age showing a marked secondary anemia, due to a neoplasm of the ascending colon which had been surgically removed. Her red cell count on admission had been 3.6 million per cubic millimeter with a hemoglobin of 55 per cent. After treatment the hemoglobin rose to 85 per cent. Dr. Homans stressed the importance of suspecting a neoplasm of the colon when there were local symptoms on the right side of the abdomen with a secondary anemia. When the lesion is in the descending colon there are fewer symptoms.

Dr. Minot introduced Dr. Davidson and stated that King's College, a part of Aberdeen University, founded its medical chair in 1505 and that it repre-

sents the oldest foundation for the teaching of medicine in Great Britain. Dr. Davidson stated that all anemias fall into one of three groups: first, those due to a dietary deficiency, directly or indirectly; secondly, those due to a depression of or interference with blood formation; and thirdly, the hemolytic anemias, either congenital or acquired. Of these groups the first is the most important and the most common. It may in turn be divided into two subgroups: first, the macrocytic, "hyperchromic" type for which liver is a specific; and secondly, the iron deficiency anemias where the cells are microcytic and hypochromic. It was with this second subgroup of the deficiency anemias that Dr. Davidson spent the greater part of his time.

Hypochromic anemias are much more common than the hyperchromic (macrocytic) group. Out of a thousand women of the poorer classes at Aberdeen examined at random, 487 had the hypochromic type while not one had the macrocytic. While the condition does not kill, it leads to a serious lowering of the general vitality with a lowered resistance to infection. Considering the simplicity of the treatment, it is of great importance to recognize the condition.

There are three considerations in the etiology of this defect of the iron metabolism. First, there may be a low iron intake such as occurs from a long continued milk diet in infants or in the low protein, high carbohydrate diet of the adult. Secondly, there may be defective absorption and the rôle played in this respect by gastric achlorhydria needs consideration. Lastly, there may be an increased demand for iron as in blood loss, pregnancy, or infection.

Among the infants of the working classes studied by McKay in London, 50 per cent showed a hypochromic anemia. At birth the hemoglobin is from 120 to 140 per cent and the red cell count is from 6 to 7 million per cubic millimeter. The reason for this is the low oxygen tension in the blood of the fetus which causes the above compensatory mechanism to take place. At this time the bone marrow is also very active. After twelve weeks the hemoglobin has fallen to about 65 per cent. This fall is a physiological result of the relief of the anoxemia after birth and is directly due to a decrease in the bone marrow activity as well as to an increase of cell destruction. Following this period of fall of hemoglobin content, there is a rise to a somewhat higher level, at which level the normal infant stays. In the child of an anemic mother, however, after the fourth or sixth month the hemoglobin again falls to about 60 per cent. The cause for this fall is found in the failure of the infant to accumulate the proper amount of iron in his liver before birth, due to the lack of iron in the mother, so that the normal period of low iron intake during nursing is not compensated for by the stored iron. The proper treatment of this condition is with the pregnant mother, although the anemic child can

also be fed iron with excellent results. No matter how anemic the mother may be, the child is always normal at birth, the low hemoglobin not developing until about the sixth month.

In children from four to fourteen years of age the incidence of anemia is less than one per cent, because in this period of life there are seldom extra demands for iron. In the adolescent period however, chlorosis very frequently used to occur. This happens among young women especially in the employed classes and presents a pronounced hypochromic anemia. High doses of iron cured it and better diet is perhaps responsible for its decrease. At puberty there is an increase in the body metabolism and menstruation is an added drain on the iron stores and it seems probable that this factor in the face of deficient iron intake played a rôle in the production of this disease which is very rare now. The older clinicians stated that in chlorosis there was often an accompanying hyperacidity, gastric ulcers, and occasional hematemesis but upon investigation of these beliefs, Dr Davidson has found that they were not proved by sound experimental or clinical data. The frequency of hypochromic anemia in the middle-aged is astonishing.

In adults, it has been found that the male unless there is an organic cause, will not develop anemia on as low an iron intake as six to eight milligrams per day. Almost all cases of hypochromic anemia occur in women. Among the poor of Aberdeen nearly 50 per cent of the adult women show some degree of anemia. The first factor of importance is the number of pregnancies there being two considerations here first, the fact that the larger the family is the less food the mother will get, and secondly, the added drain of the fetus on the iron supply of the mother. There is a direct relation between the number of pregnancies and the percentage of anemic women in any group. The second factor is the occurrence of achlorhydria (70 per cent of these cases) which may interfere with the utilization of the iron intake. Thirty per cent of the cases showed enlarged spleens. 70 per cent had tongue changes and 51 per cent had nail changes.

The third factor is the diet. When there are special demands on the iron metabolism of the body the low intake of six to eight milligrams per day is not sufficient. These people live on a very high carbohydrate diet, 80 to 90 per cent of it consisting of cereals. Yet many do not develop anemia until additional strain, as pregnancy, blood loss, infection or difficulty in absorption from the gastro-intestinal tract arises.

It is very expensive to correct the diet with regard to the iron intake and the results from such correction are poor. A penny's worth of ferrous chloride or sulphate per day will clear up the condition and act as a preventive measure.

Drs Minot, Murphy and Castle discussed the paper and spoke briefly on chlorosis, the type of iron used and the proper dosage.

CLOVER HILL HOSPITAL

The next medical meeting of the Clover Hill Hospital will be held in the Reception Room of the hospital at 161 Berkeley St., Lawrence on Thursday evening May 3, 1934, at 9 P.M.

The speaker will be Abraham Myerson M.D., Professor of Neurology, Tufts College Medical School.

His subject will be 'The Principal Organic Diseases of the Brain.'

All physicians of Lawrence and vicinity are invited to attend.

N. F. DECESARE, M.D. *Chairman*

HARVARD MEDICAL SOCIETY

The next meeting of the Harvard Medical Society will be held in the Peter Bent Brigham Hospital Amphitheatre (Van Dyke Street entrance), Tuesday evening, May 8, at 8 15 P.M.

PROGRAM

Presentation of Cases.

Factors Controlling the Peripheral Blood Flow in Man. By Dr. Norman E. Freeman.

Studies on the Innervation of the Blood Vessels and Their Application to Neurovascular Surgery. By Dr. James C. White.

Dr. Walter B. Cannon will preside.

JOHN HOMANS, M.D. *Secretary*

THE NEW ENGLAND PEDIATRIC SOCIETY

The spring meeting of the New England Pediatric Society will be held in New Haven, Connecticut, on Saturday, May 19, 1934. Details of the program will be published in this *Journal* at a later date.

GERALD HOFFEL, M.D. *Secretary*

NEW ENGLAND OBSTETRICAL AND GYNECOLOGICAL SOCIETY

The spring meeting of the New England Obstetrical and Gynecological Society is to be held on Wednesday, May 16, 1934, at Portland, Maine.

An extremely interesting program has been arranged.

The registration of members will take place at the Maine General Hospital from 9 00 A.M. until 1 00 P.M., and in the afternoon at the Chamber of Commerce Building, 142 Free Street, from 2 00 P.M. until 5 00 P.M.

FRED J. LYNCH, M.D.

FAULKNER HOSPITAL CLINICAL MEETING

The next meeting will be held at the Faulkner Hospital on Thursday afternoon, May 3, 1934, at 5 00 P.M. In addition to the usual clinical pathological conference on the cases which have come to autopsy during the month, Dr. William W. Howell will give a short discourse on 'The Infant's and Child's Resistance.' All physicians who are interested are cordially invited.

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July 24 31—The IVth International Congress of Radiology will be held in Zurich under the presidency of Professor H. R. Schnitz General Secretary Dr H. E. Walther, Gloriastrasse 14, Zurich

September 3 6—American Public Health Association at Pasadena, California Dr J D Dunshee, Chairman, Local Committee on Arrangements

September 4, 5, 6—International Union Against Tuberculosis For information address the National Tuberculosis Association, 450 Seventh Avenue, New York City

DISTRICT MEDICAL SOCIETIES

ESSEX NORTH DISTRICT MEDICAL SOCIETY

Thursday, May 3—Censors Meeting will be held at the Hotel Bartlett, Haverhill for the examination of candidates

E S BAGNALL, M.D., Secretary

231 Main Street Groveland Mass

ESSEX SOUTH DISTRICT MEDICAL SOCIETY

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Tuesday, May 8—Annual Meeting Salem Country Club, Forrest Street, Peabody Dinner at 7 Speaker to be announced Subject to be announced.

RALPH E STONE, M.D. Secretary

221 Cabot Street, Beverly, Mass.

FRANKLIN DISTRICT MEDICAL SOCIETY

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CHARLES MOLINE, M.D., Secretary

Sunderland Mass

HAMPDEN DISTRICT MEDICAL SOCIETY

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249 Union Street, Springfield Mass

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The Interdependence of Medicine with Other Sciences of Nature By William H Welch 48 pp Baltimore The Welch Bibliophilic Society, 1934

In November, 1933, a few friends of Dr William H. Welch of Baltimore gathered together and formed the Welch Bibliophilic Society Their object was to publish texts which were unobtainable in such a fashion as met their requirements of taste The first volume issued by the Society is a reprint of the presidential address given by Dr Welch at a meeting of the American Association for the Advancement of Science in 1907 not previously available in book form A pleasant introduction by Fielding H Garrison points out the value of this work as a contribution to medicine today the best study ever made of the interrelationship of medicine and science This little volume is beautifully printed and bound and is a great credit to this new bibliophilic society Two hundred and twenty-five copies have been issued privately

The New England Journal of Medicine

VOLUME 210

MAY 3, 1934

NUMBER 18

NEW ENGLAND SURGICAL SOCIETY

ACUTE THYROIDITIS WITH REPORT OF TEN CASES*

BY ROBERT C COCHRANE, M.D.,† AND STANLEY J G NOWAK, M.D.†

GLANDS of internal secretion are peculiarly immune to acute infection, their tendency toward pathologic changes lies rather in the direction of dysfunction and tumor formation. Exceptions to this general rule are the thyroid and testis. Acute inflammation of the thyroid gland is not commonly encountered and by reason of its obscurity is subject to errors of management and treatment. It has been our rare privilege to study ten cases of acute thyroiditis at the Boston City Hospital and to observe personally four of these. This experience has enabled us to formulate a conception of diagnosis and treatment which we wish to present in this communication.

Inflammatory lesions of the thyroid may be classified broadly as acute and chronic. The acute form was subclassified by Mygind¹ in 1894 into simple acute and acute suppurative types, each of which he considered a disease sui generis, a view not readily tenable at the present time. Following this simple yet adequate, classification further subdivision was suggested with respect to the presence or absence of adenoma, thus acute thyroiditis represented inflammation of a normal gland while strumitis referred to an acute lesion superimposed on an adenomatous growth. It was further thought that acute thyroiditis remained in the state of acute cellulitis whereas acute strumitis proceeded on to suppuration. These distinctions are not supported by the present-day conception of this disease and it appears that Mygind's original classification of the acute form into simple and suppurative groups can hardly be improved upon.

Although attention was directed toward acute inflammation of the thyroid by Carrion Walter, Conrad and others² in the eighteenth century, only scattered case reports and three collective reviews have made their appearance in literature. As early as 1857, however, Bauchet³ wrote a monograph on the subject with five case reports which remains to the present day a classic for its accuracy and thoroughness of description. Oddly enough this work has not

received its proper recognition. In 1878 before the days of bacteriology Kocher considered acute thyroiditis as of infectious metastatic origin, a view which was subsequently confirmed by Tavel in 1892⁴. Three years later appeared Mygind's classification already referred to. In 1896 Ewald⁵ dispensed with the rigid conception of simple and suppurative thyroiditis as separate disease entities as suggested by Mygind and supported by DeQuervain. The subject remained dormant until the appearance of the collective reviews of Robertson in 1911⁶ of Hagenbuch in 1921⁶ and of Burhans in 1928⁷.

The incidence of thyroiditis is extremely low, estimated at less than one-half per cent of all observed clinical cases of thyroid disease. During the senior author's experience with five hundred thyroidectomies there occurred seven cases, three of which came to operation.

With the exception of several cases in which the infection was due to direct trauma as reported by Link⁸ or extension from a thyroglossal duct as reported by Cleland⁹ the lesion is usually secondary to some other focus as originally stated by Kocher. The frequency with which this condition follows upper respiratory infections points to the lymphatics as an important route of infection. The blood stream also carries organisms to the gland as in cases of puerperal septicemia, typhoid fever, pneumonia, etc. Finally, changes in physiological states such as puberty, menstruation and pregnancy are also well-recognized predisposing factors.

Females are more susceptible to the disease than males in a ratio of two to one. The average age of onset is from twenty to forty, the extreme limits being eighteen months and seventy-seven years.

The history of previous goitre is a rather frequent finding as is shown in thirty-two of the sixty-seven cases of Burhans⁷ and thirty-three of the ninety-six cases of Robertson⁵. On the other hand only five of the forty-three cases of Hagenbuch⁶ showed previous goitre. This factor must be a variable one depending for example, upon the presence of goitre in certain regions. Hyperthyroidism, on the other hand, is rarely complicated by acute thyroiditis. Bothe¹⁰ has, however, reported a case in which the metabolic rate registered plus 42. The disease leads frequently to various degrees of myxedema as re-

Read before the New England Surgical Society at Boston, September 30, 1933.

†Cochran, Robert C — Surgeon in Chief, Second Surgical Service, Boston City Hospital. Nowak, Stanley J G — Assistant Director of the Surgical Research Laboratory, Boston City Hospital. For records and addresses of authors see "This Week's Issue" page 971.

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He flexes it gently forward, chin inclined toward the sternum, he relaxes in a word the subhyoid muscles. The tumefaction obliterated the hollow formed by the junction of the two sternomastoid muscles. This tumor follows the movements, upward and downward, of the larynx. On requesting the patient to drink one observes what goes on in the tumor."

He further describes the course of the disease so accurately that the following extract is also presented. "Thyroiditis lasts in general one or two weeks, the tumor appears on the second or third day, enlarges from the third up to the fifth or sixth day, then if suppuration does not follow, it diminishes from this time and disappears from the fifteenth to the twentieth day. During the early stages the symptoms become aggravated, they remain stationary for a day or two, then disappear more or less quickly, according to the patient and the treatment which was put to use. That is the progress most normal of thyroiditis. If the inflamed thyroid has a tendency to terminate with suppuration the symptoms become aggravated, the fever does not fall around the sixth day, on the contrary, chills manifest themselves, the skin is tense and red, the tumor becomes more painful, softens, and becomes fluctuant. The fluctuation is generally manifested from the tenth to the twentieth day. In case the abscess spreads outward the infection will be more serious and almost always fatal, the pus will fuse with the cellular tissue, follow the trachea, the vessels of the neck, reach as far as the anterior mediastinum or the posterior mediastinum and one understands at once the danger of such complications."

The temperature in simple thyroiditis may be only slightly elevated while suppuration of the gland is associated with a temperature of 102°F sometimes reaching 104°. Occasionally chills and sharp elevation of temperature are observed resembling that seen in malaria. The leukocyte count ranges from 14,000 to 30,000. Positive blood cultures are to be expected in some cases showing, of course, any one of the organisms mentioned.

Of all the conditions for which this disease is mistaken cellulitis of the neck is the most frequent. The latter is extremely rare in the lower half of the neck in the midline. It is found practically always in its greatest intensity in the submaxillary or carotid triangles. It is safe to say that cellulitis confined to the lower half of the front of the neck is secondary to an inflamed thyroid gland, particularly if the gland itself is tender to pressure, if the suprasternal notch is obliterated, and if dysphagia or aphonia are present. Ludwig's angina will show definite ulceration in the pharynx along with submaxillary or submental involvement. Other infectious lesions to be differenti-

ated from thyroiditis are diphtheritic laryngitis and perichondritis of the thyroid cartilage, both of which are rare and which will be recognized by laryngoscopy. Chronic infections of the thyroid of either tuberculous or luetic origin will simulate subacute involvement of the thyroid. The ultimate differentiation will probably rest with the pathological sections. Both adenoma and carcinoma may present a strong resemblance to acute thyroiditis and vice versa. Spontaneous hemorrhage in an adenoma, although rare, may be confused with acute thyroiditis because of its sudden onset, acute pain, swelling and localized tenderness. This condition will not, however, show a constitutional reaction. Simple colloid goitre when characterized by rapid growth will often resemble simple acute thyroiditis because of the swelling and tenderness but again will not be associated with general reaction. Finally, tumors or diverticulae of the esophagus, and tumors of the superior mediastinum need only be mentioned as differential problems.

The prognosis is excellent in simple acute thyroiditis. Resolution will occur under palliative treatment in ten to fourteen days. Robertson⁵ in his series of ninety-six cases reported two deaths in fifty-six cases of simple thyroiditis giving a mortality of 3.5 per cent. In forty suppurative cases he reported nine deaths, giving a mortality of 22.5 per cent. These figures bear out our impression that suppurative disease of the thyroid is a serious condition in contrast to the relatively excellent prognosis of simple acute thyroiditis.

Recurrences in both simple and suppurative types have been reported and were observed in one of our cases.

The complications of the disease are perforation into the larynx or trachea, mediastinitis, pyemia, septic joints, osteomyelitis, myxedema or more rarely thyrotoxicosis.

Treatment of the disease falls into two categories non-operative and operative. Simple acute thyroiditis will yield to supportive treatment consisting of local cold or heat, rest, elevation of the head, and sedatives. The presence or suspicion of a suppurative process calls for early operative incision and drainage. In rare cases of miliary abscesses, partial thyroidectomy has been recommended by Clute and Smith.¹⁴ In the presence of suppurative adenomata, Vianny¹⁵ has advised partial strumectomy ("Strumectomie a chaud primitive") which he has done in three cases. In some cases operative interference will be aimed at relief of the general toxemia resulting from the local lesion, in others it will be directed at relief of pressure symptoms reaching proportions of an emergency. The choice of anesthetic is important, particularly where tracheal obstruction is present. The use of a general anesthetic may cause a dangerous asphyxial spasm of the larynx and upper

ported by Burhans⁷ and Hallberg¹¹. An extreme grade of myxedema has been reported by Wilcox¹² in the case of a girl who developed suppurative thyroiditis from local sepsis after a transcervical removal of a foreign body from the esophagus.

A long list of organisms has been found to cause this lesion. The most common of these are streptococcus hemolyticus, staphylococcus aureus, pneumococcus, typhoid, paratyphoid a, paratyphoid b and colon bacillus. More rarely one encounters malarial parasites and trypanosomes. Thyroiditis has been known to occur after smallpox, measles, rheumatic fever, influenza, diphtheria, and cerebrospinal meningitis.

In 1899 Roger and Garnier¹³ studied the effect of bacteria injected into the common carotid artery which was ligated above the origin of the thyroid arteries. They found the gland little affected after injection of staphylococci and bacilli typhosus. On the other hand the injection of streptococci, diphtheria toxin, tetanus toxin, pilocarpine nitrate and iodides produces definite pathological lesions of acute thyroiditis.

These same workers made the earliest contributions to the pathology of the disease. Their studies were based on postmortem examinations of thirty-three cases following various acute infections such as scarlet fever, measles, diphtheria, typhoid, meningitis, smallpox and streptococcus peritonitis. Microscopically, changes were noted in the acini, in the stroma, and in the blood vessels. The acini were found to be smaller than usual resembling secretions of an infantile thyroid. They were devoid of colloid material which appeared to migrate into the interstitial spaces and lymphatics. The acini showed various degrees of disintegration and their lumina were filled with poorly staining granular cells, the result of earlier desquamation. Throughout they observed a generalized capillary dilation and rare hemorrhages. This description is obviously one of the simple acute type. The suppurative stage is characterized by diffuse polymorphonuclear infiltration, bacterial invasion, and necrosis. For more recent pathological descriptions the publications of Burhans⁷ and of Clute and Smith¹⁴ are recommended.

From this local picture it is apparent that the disease process readily spreads to the surrounding tissues involving the pretracheal muscles, the recurrent laryngeal nerve, the thyroid cartilage, the trachea, the esophagus (with possible perforation of these structures) and spreads under the deep cervical fascia either upward toward the mandible or downward into the anterior mediastinum.

The relationship of acute to chronic thyroiditis is not a clear one. Most writers consider each process a distinct entity. This may well be the general rule but our experience with one case of recurrent acute attacks with evidence of acute necrosis superimposed on a chronic lesion

demonstrates a possible relationship between the acute and chronic processes. Similar findings have been noted by Deaver and Burden¹⁵ and by Vianny¹⁶.

The characteristic symptoms of acute thyroiditis are pain over the gland, dysphagia, hoarseness, dyspnea and chills. Pain may be the initial symptom of the disease. Usually characterized by soreness it may become lancinating and radiate to the ear or the shoulders, undoubtedly a sympathetic phenomenon. It may dominate the picture and direct the attention to the ear.

The presence of a tumor may be the initial symptom in some cases.

Dysphagia is a very prominent complaint. It may vary from slight discomfort to inability to swallow anything but liquids. This symptom is due to the presence of the tumor and is frequently accompanied by a constant desire to swallow because of the feeling of pressure on the esophagus.

Hoarseness is also common and is due probably to an extension of the inflammatory process to the vocal cords or the recurrent nerve. At times the voice is reduced to a whisper. This symptom may be so dominant as to lead to a search for an intralaryngeal growth.

The inflammatory tumor and surrounding reaction inevitably constrict the trachea to produce respiratory obstruction of varying degrees culminating in some cases in asphyxia. This phase of the disease is extremely important in the consideration of the choice of anesthetic.

Hyperthyroidism has been known to occur with the characteristic eye signs, elevated metabolism, nervousness, and so forth, but it is a rare manifestation.

Toxemia, however, may be overwhelming. It is, of course, dependent upon factors chief of which are the nature of the involving organism, the amount of the gland involved, and the resistance of the patient.

The characteristic signs are swelling over one or both lobes of the thyroid with marked local tenderness. Edema is commonly present. Redness, however, is a late sign even in the presence of suppuration. The swelling may preserve the contour of the lobe or gland or it may be diffuse in appearance causing obliteration of the suprasternal notch.

The attitude of the patient is the second most characteristic sign. The patient usually sits up in bed, with head bent forward, with a distressed stare, dyspneic, swallowing frequently, possibly coughing, and unable to raise his voice above a whisper. Bauchet's³ original description brings out most of the important physical features of the disease, some of which have been accredited to various subsequent writers. Let us quote from his historical monograph: "The patient gives to the head a particular position

1	M M F 22 Suppurative	Soreness of lower neck and throat Radiation to both ears	1½ weeks Influenza	Median swelling T—100, P—90, W B C—10,000	I & D Local	Cured 13 days in Hosp	6 months pregnant
2	K T F 28 Suppurative	Sore throat Pain over thyroid	2 days Pharyngitis and otitis	Median swelling, tenderness, redness, obliteration of supra sternal notch T—99 P—95	I & D Ether	Cured 20 days in Hosp	Paruocentesis 2 days before onset
3	P P F 45 Suppurative	Soreness, swelling in neck, chills, constant swallowing, dyspnea	30 days	Swelling of right lobe, redness T—98 104 P—95 W B C—6,800-4,400	Pullia live	Cured 30 days in Hosp	No malarial parasites found B M R—plus 1%
4	J H M 28 Suppurative	Painful swelling, of neck, dysphagia dyspnea, loss of weight	2 weeks Previous attack 8 weeks before ? of septic bleed on heel	Diffuse swelling, redness, tenderness, obliteration of suprasternal notch anterior neck rigidity W B C—26 600	Tracheotomy Gas	Dead	Asphyxiated under gas Staphylococcus aureus Blood culture first admission
5	A M M 32 Suppurative	Swelling in neck, orthopnea, nervousness, dysphonia.	1 week Influenza	Diffuse swelling, redness, tenderness, obliteration of suprasternal notch, anterior neck rigidity T—102, P—120, W B C—20,750	I & D Local	Dead 10 hours	Terminal thyroid storm Staphylococcus aureus
6	T O M 39 Suppurative	Swelling in neck, dysphagia, aphonia, dyspnea, radiation to both ears	2 weeks Coryza	Swelling on right, tenderness, edema, obliteration of supra sternal notch, anterior neck rigidity T—102, P—120, W B C—30,250	I & D Local	Cured 23 days in Hosp	B M R—10% 6 weeks postoperative Staphylococcus hemolyticus
7	E M M 61 Suppurative	Lower neck pain radiating to shoulder, dyspnea	2 days	Swelling on right, tenderness, edema, redness, cellulitis of chest wall T—102, P—105, W B C—16,200	Pullia live	Dead 4 days in Hosp	Too sick to operate Staphylococcus hemolyticus
8	M R F 36 Acute	Swelling left side of neck, paroxysms of coughing, dyspnea.	Several days 2 attacks	Diffuse swelling, on left, local tenderness, obliteration of suprasternal notch T—98 P—87, W B C—16,200	Pullia live	Cured 7 days in Hosp	
9	J O M 23 Acute	Soreness and swelling of neck	1 week	Swelling on left, local tenderness T—101, P—114	Pullia live	Cured 9 days in Hosp	
10	C W F 55 Acute	Pain left side of neck during course of pneumonia	7 days Pneumonia	Swelling, on left, edema, redness, tenderness T—101 5, P—80, W B C—11,600	Pullia live	Dead	Death due to pneumonia

trachea, particularly in an individual with a short neck. Where obstruction is a definite possibility we feel that incision and drainage should be carried out under local anesthesia with adequate preoperative medication.

The actual operative procedure consists of the classical collar line incision and exposure of the gland. The abscess which usually points to the surface of the gland or surrounds it is then opened by blunt scissor dissection and drained by rubber dams. The wound is then loosely sutured about the drains. Partial thyroidectomy may be advisable as already stated.

DISCUSSION

It is no exaggeration to say that acute thyroiditis as an entity is unknown to the average internist and surgeon. It frequently masquerades under the name of cellulitis of neck in the suppurative stage or painful goitre in the simple acute stage. We are of the opinion that the disease, although uncommon, is by no means rare and should be considered in all cases of swelling either circumscribed or diffuse in the lower neck associated with inflammatory symptoms and signs.

It follows that the acute surgical aspect in many of these cases has been entirely overlooked either from failure of diagnosis or from inadequate appreciation of the seriousness of the suppurative stage of the disease. Our experience of three deaths in seven suppurative cases shows how grave the disease may be. The common error is that of delayed operation and improper choice of anesthetic. It is, however, highly probable that operative interference in the presence of streptococcus hemolyticus infection before localization of the infection occurs may result in spread of infection into the blood stream. This purely speculative note is mentioned only because surgical experience has repeatedly brought out the danger of too early operative interference in streptococcus infections elsewhere. We reiterate, however, that the prevalent error is that of delayed operation.

The choice of anesthetic has been stressed and the desirability of local anesthesia in most cases is urged. It is absolutely indicated in the presence of obstructive phenomena. The operative technique presents no problems save for the occasional desirability of subtotal resection in the presence of milary abscesses.

The ten cases reported represent both the typical and atypical aspects of the disease. They illustrate the relatively favorable prognosis of the simple acute form in contrast to the serious prognosis of the suppurative form. They bear out the usefulness of this broad classification not only in the matter of prognosis but also in the choice of therapeutic procedure.

Reports of seven cases of acute suppurative thyroiditis and three cases of simple acute thyroiditis follow.

CASE No 1 M. M. (Hosp No 332144) a twenty-two year old single female was admitted to the B. C. H. on Jan 31, 1916 with a complaint of sore throat and soreness in the neck and both ears of one and one-half weeks' duration. These symptoms developed three to four days after the onset of an attack of influenza. Since the onset of these symptoms the patient had noticed general malaise and a slight fever. There was no exophthalmos, tachycardia, or nervousness. The patient had had no previous swelling of the thyroid. The family and past history revealed no significant facts. Physical examination showed a well-developed and well-nourished young female adult. Eyes, ears, nose, and throat showed no abnormality. The neck revealed a marked enlargement in the region of the thyroid, particularly noticeable over the isthmus. This enlargement was moderately tender and felt rather soft. There was no redness of the overlying skin. The heart showed no enlargement or murmurs. The apex rate was 84 and was regular in rhythm. The lungs were clear. The abdomen showed an enlarged uterus of six months pregnancy. The extremities showed no tumor or other abnormalities. The temperature on admission was 100°F, pulse 90-100, respirations 25. The admission white blood count was 10,000, the urine and the Wassermann reaction were negative. On February 2 (two days after admission) an incision and drainage of the thyroid was done under 0.5 per cent procaine by Dr. Lahey. A large abscess was found in the region of the isthmus which yielded thick creamy pus. The postoperative course was uneventful, the temperature reaching normal on the third day. The patient was discharged on the thirteenth day (Feb. 14, 1916).

Diagnosis —Acute Suppurative Thyroiditis, Pregnancy

CASE No 2 K. T. (Hosp No 442678, 443170) a twenty-eight year old married woman was admitted to the B. C. H. on Sept. 8, 1922 with a complaint of sore throat and fever. Three weeks ago the patient noticed a sore throat associated with chills and fever which cleared up in two days. She had a recurrence of these symptoms one week later with similar recovery. Several days before admission the patient had a third attack of the same symptoms. These were characterized by pain in the right side of the throat on swallowing and radiation of this pain to the right ear. There were no symptoms of thyroid toxicity during the present illness or in the past history. The marital history showed three normal pregnancies. Physical examination showed no abnormal findings except in the throat. There was a slight erythema of the pharynx, the tonsils were definitely enlarged and slightly reddened. The right ear drum and canal wall were red and there was bulging of the drum. The temperature was 99.0°F, and pulse 95, respiration 25. Paracentesis was performed on September 9 (one day after admission). One week after admission the patient developed a diffuse swelling and redness over the thyroid region with obliteration of the suprasternal notch. There were no signs of thyroid toxicity. A pre-operative B. M. R. was reported as "normal." On September 18 (two days after development of thyroid swelling) incision and drainage was performed under ether by Dr. Loder. A midline abscess was found. The patient was discharged nine days later (Sept. 28).

Diagnosis —Acute Suppurative Thyroiditis, Acute Pharyngitis, Acute Otitis Media (right)

CASE No 3 P. P. (Hosp No 462947) a forty-five year old Greek married female was admitted to the B. C. H. on September 7, 1923 with a complaint

aureus. Five hours after operation the pulse rose from 125 to 150, the respirations increased to 35. The clinical picture was that of thyroid storm for which the patient was treated. Death occurred, however, twelve hours after operation.

Diagnosis—Acute Suppurative Thyroiditis, Pleuritis, Bronchopneumonia (Right)

CASE No 6 T O (Hosp No 704522) a single white chauffeur was admitted to the B C H on March 30 1933 with the complaint of swelling in the right side of the neck of two weeks duration. This swelling developed during an attack of coryza. One week before admission the patient developed dysphagia which increased up to the point of inability to swallow anything but liquids. On the day of admission swallowing liquids caused severe pain in the thyroid region. Three days before admission the pain radiated from the lower neck to the right ear. The family history was unimportant. The past history revealed diphtheria during childhood influenza in 1913 acute tonsillitis two years ago and tonsillectomy shortly afterward. Physical examination showed no abnormal eye signs in ability to open the mouth beyond one-half the normal limit and swelling over the lower neck region. The swelling was more marked over the right lobe of the thyroid with slight edema of the skin extending over the median portion of the neck filling out the suprasternal notch. There was marked tenderness over the right lobe and slight tenderness over the isthmus. The heart, lungs, abdomen and extremities showed no abnormalities. The admission temperature was 102°F pulse 90 120 respirations 26. The white blood count was 14 500 which rose to 30 250 on the second day. The blood smear showed 98 per cent polymorphonuclears with many young forms 2 per cent lymphocytes. The Kahn reaction was negative. Incision and drainage was done under local anesthesia by Dr C C. Lund. Abscess was found in the right lobe containing thick pus which on culture proved to be streptococcus hemolyticus. The postoperative course was without incident the temperature reaching normal on the fourth day postoperative. On the twenty first day postoperative the patient was discharged. One month after discharge the B M R. was -10 per cent.

Diagnosis—Acute Suppurative Thyroiditis

CASE No 7 E M (Hosp No 585066) a sixty-one year old married white janitor was admitted to the B C H on October 15 1929 with a complaint of dull steady pain in both sides of the neck of two days duration. The onset was very sudden and was associated with nausea vomiting malaise and dysphagia several hours later. The family marital and past history was unimportant. There was no history of thyroid disturbance. The physical examination showed a redness and edema over the right side of the neck and upper chest to the fifth rib anteriorly. The swelling in the neck extended beyond the midline and was tender. Both tonsils were enlarged reddened and covered with a yellowish exudate. The remainder of the examination showed no abnormalities. On admission the temperature was 102°F pulse 105 respirations 25 blood pressure 122/72. The white blood count was 16 800 the red count 4 200 000. On the third day the blood culture showed no growth. The patient's progress showed a sustained temperature and pulse rising to 120 with painful paroxysms of coughing and extreme prostration. Death occurred on the fourth day. Autopsy showed swelling and edema of the anterior portion of the neck and thoracic wall. On the right side of the neck above the clavicle there was a swollen indurated mass which on section showed considerable sero-

purulent fluid. This inflammatory process extended into the anterior mediastinum. Culture of the inflamed area showed streptococcus hemolyticus. The heart showed moderate hypertrophy and coronary sclerosis. The lungs were negative.

Diagnosis—Acute Suppurative Thyroiditis

CASE No 8 M R. (Hosp No 467849) a thirty-six year old married female was admitted to the B C H on Jan. 18, 1924 with a complaint of swelling over the lower neck. The patient had entered with a similar complaint on Dec. 3, 1923 and was discharged four days later. During this admission the patient was seen by Dr Lahey who advised conservative treatment for acute thyroiditis. During the interval there was an increase in the swelling with paroxysms of coughing, dyspnea in the prone position and nervousness. The family history was unimportant. The marital history revealed seven pregnancies, two of which terminated in miscarriages. The past history disclosed an attack of hoarseness without sore throat one year ago. Physical examination showed no abnormalities except for a swelling more marked on the left, extending from the hyoid bone to the suprasternal notch. The swelling was slightly tender. There were no thrills or bruit. The admission temperature was 98.0°F, pulse 87 respirations 21, blood pressure 112/70. The white blood count was 16,200 with a differential count of 61 per cent polymorphonuclears, 24 per cent lymphocytes 10 per cent monocytes, and 5 per cent eosinophiles. The Wassermann reaction was negative. The tenderness and swelling decreased with symptomatic treatment and the patient was discharged on the seventh day (Jan 25 1924).

Diagnosis—Acute Thyroiditis

CASE No 9 J C (Hosp No 480604) a twenty-three year old single male was admitted to the B C H on July 5 1924 with a complaint of tenderness over the left side of the lower neck of one week's duration. The patient had noticed a fullness in the lower neck for the past two years but the swelling began to increase in size one week ago. The past history revealed an accident resulting in concussion one year ago. Physical examination showed a larger pupil on the left with normal reactions. There was a marked symmetrical swelling on both sides of the neck more marked on the left where it reached the size of a hen's egg. This swelling was acutely tender. The heart and lungs were normal. There was definite tremor of both hands. The admission temperature was 101°F, pulse 114 respirations 24. The patient was seen by Dr Ullian who confirmed the diagnosis of acute thyroiditis. The patient's condition improved with symptomatic treatment, the temperature reaching normal on the fourth day. The patient was discharged on the ninth day (July 14, 1924).

Diagnosis—Acute Thyroiditis

CASE No 10 C W (Hosp No 700027) a fifty-five year old white married, housewife was admitted on February 15 1933 with a complaint of pain in the left chest of four days duration. Five weeks before admission the patient developed an acute upper respiratory infection with an unproductive cough. Four days before admission she was seized with severe left pleuritic pain for which she entered the hospital. The family history was unimportant. The marital history disclosed four normal pregnancies. The past history revealed diphtheria at the age of seventeen. Catamenia stopped three years ago. There has been a loss of thirty pounds in the past four years. Physical examination showed signs of fluid with a suggestive underlying atelectasis, because of the displacement of the heart to the right.

of soreness in the neck following the appearance of a swelling in the lower left region of the neck. The swelling had gradually increased in size and along with chills, fever, nervousness, irritability, dyspnea and insomnia. The family history was unimportant, the past history revealed epigastric distress of several years' duration and some gynecological disorder leading to a dilatation and curettage one year ago. The physical examination showed an enlargement of the right lobe of the thyroid the size of an egg. The swelling was hard and irregular extending under the clavicle. The isthmus was palpable the left lobe was slightly enlarged. Redness was present over the mass. No thrill, bruit, or exophthalmos was observed. The patient was continually swallowing because of the pressure of the mass. The remainder of the physical examination showed no abnormality except for a presystolic murmur heard over the precordium, most marked over the apex. There was no cardiac enlargement. The temperature was 98.0°F, pulse 75, respirations 22, white blood count 6,800, blood pressure 132 systolic, 80 diastolic. The urine showed a slight trace of albumin in three out of nine examinations. The Wassermann reaction was negative. The swelling appeared to quiet down with conservative treatment. On the fifteenth day of admission the temperature rose to 104°F with increase of local symptoms. The white blood count was 4,400. A blood smear revealed the following: 68.3 per cent polymorphonuclears, 10 per cent large lymphocytes, 15 per cent small lymphocytes, 0.3 per cent basophiles, 0.3 per cent myelocytes, 2.3 per cent metamyelocytes, 2.8 per cent large mononuclears, 1 per cent eosinophiles. The red blood count was 4,112,000 hemoglobin (Tallqvist) 70 per cent. No malarial parasites were seen. Chills and fever persisted for one week and on the twenty-third day the condition began to improve. At this time the B. M. R. was plus 1 per cent. On the twenty-seventh day the patient was put on a malarial régime of quinine with improvement in the local and general condition. The patient was discharged on the thirtieth day after admission (October 6, 1923).

Diagnosis—Acute Suppurative Thyroiditis

CASE No 4 J. H. (Hosp No 574716) a twenty-eight year old male stenographer was first admitted to the B. C. H. on December 4, 1928 with a complaint of swelling in the lower neck and dysphagia of four days duration. During the past three months he had noticed a loss of forty pounds in weight. There were no other signs of thyroid toxicity. Physical examination showed a well developed adult with moderate dyspnea and unproductive cough. There was a brawny edema over the lower neck, obliterating the suprasternal notch. The throat showed slight redness. On admission the white blood count was 26,600 and the blood culture showed a staphylococcus aureus growth in seventy-two hours. On admission x-ray examination of the chest showed no evidence of pathology. Two weeks after admission the patient developed clinical and x-ray signs of pneumococemia in the left base. Feeding by nasal tube was found necessary because of the difficulty in swallowing. Both neck and chest conditions cleared up, however, and the patient was discharged to the medical wards eight weeks after admission (Oct 29).

Diagnosis—Acute Thyroiditis Bronchopneumonia (Left)

Two weeks after discharge the patient had a recurrence of the neck symptoms characterized chiefly by dysphagia. He attempted domestic treatment for two weeks but found it necessary to be readmitted on December 4. On this admission he showed a diffuse swelling of the neck from the hyoid bone to

the sternum and laterally to the posterior margins of the sternomastoids. There was redness over the lower central portion of this swelling. Deep fluctuation was obtained over the suprasternal notch. Two days after admission the neck was incised and drained. After a few inspirations of gas-oxygen the patient developed complete tracheal obstruction. An immediate tracheotomy was done by Dr. Nowak, but no respiratory exchange could be obtained.

Postmortem examination showed the thyroid gland involved in an infectious process which extended throughout the gland on both sides as irregular small abscesses. The surrounding soft tissue was edematous and small collections of pus and necrosis were found in the upper and lateral regions. The outer limits of the process indicated by dense fibrous tissue at the level of the angle of the jaw above and of the mediastinum below. Sanguinopurulent material was found in the bronchi and larger bronchioles. The smaller bronchioles contained dark red blood. Both lower lobes were atelectatic.

Microscopic analysis of the thyroid gland showed histologically both an acute and chronic inflammatory process present. There is a moderate amount of old fibrous scar tissue found which is infiltrated with plasma cells and monocytes. In these areas the colloid had disappeared to a large extent from follicles.

In addition to this the presence of a definitely acute inflammatory process is shown by the presence of an exudate of polymorphonuclear leucocytes, necrosis of follicles and giant cell formation around bits of free colloid. There are also a few small abscesses to be found. With a Gram stain a few chains of gram positive cocci and rare gram positive lancet shaped diplococci are found in these areas of acute inflammation.

On the periphery of the section are islands of essentially normal thyroid tissue save for slight colloid distention of follicles.

Diagnosis—Acute and chronic thyroiditis.

CASE No 5 A. M. (Hosp No 578185) a thirty-two year old married male was admitted to the B. C. H. on January 28, 1929 with a complaint of difficulty in breathing and swelling in the neck of one week's duration. Twelve days before admission the patient had a mild attack of grippe. Two days later he developed a sore throat and several days later a swelling over the lower neck region. These symptoms increased gradually along with the further development of nervousness and general irritability. The patient also experienced occasional attacks of palpitation. The family, marital and past history disclosed no important facts. The physical examination showed a well-developed and well-nourished adult male sitting up in bed, dyspneic, and slightly cyanotic. There was a slight exophthalmos, definite lid lag and positive von Graefe's sign. The neck showed a moderate diffuse symmetrical swelling over the lower part of the front of the neck from the hyoid bone down to and obliterating the suprasternal notch. There were redness and edema over this swelling. The consistency was firm fluctuation was absent. There was moderate generalized tenderness. The heart was normal. The pulse rate was rapid, ranging from 120-140. Examination of the chest showed dullness, increased breath sounds, increased tactile fremitus and a friction rub over the lower right half posteriorly. There was a slight tremor of both hands. On admission the temperature was 102°F, pulse 120, respirations 27. The white blood count was 20,750. Incision and drainage was done under 1 per cent procaine anesthesia by Dr. R. C. Cochrane. Frank pus was drained from both lobes after division of edematous pretracheal tissues. Culture of the pus showed staphylococcus

tory action of the secretions, another because of the absence of any fixed and abrupt angulations throughout the small intestine while, on the other hand, the colon has a content of a very different nature, also considerable stasis and fixed flexures which may possibly explain the more frequent malignancy in that organ

As regards the symptoms of the disease the individual picture varies somewhat but the basic symptom in all cases has been that of intermittent partial intestinal obstruction. All the patients have had abdominal cramps or distress, gas in the stomach, and much gas in the small intestine manifesting itself by spasms of pain and by loud rumbling noises which have been present in practically all cases.

The lumen of the intestine is apparently temporarily obstructed for a few hours or so and then the patient may get relief for several days or even several weeks before another attack. As the disease advances, the symptoms of obstruction with sudden severe abdominal cramps become more frequent and sooner or later all cases have had nausea and vomiting. The stage at which this nausea and vomiting may occur depends upon two things, the completeness of the obstruction and its nearness to the pylorus, because the more complete or the higher the obstruction, the earlier we will have nausea and vomiting.

The first attack is usually of short duration and is followed by apparently complete recovery. Weeks or months may go by before another acute obstruction occurs but as the disease progresses, these attacks are apt to be more severe and more frequent. The nausea and vomiting become very troublesome and in some cases have been aggravated merely by the sight of food because the attacks always follow soon after the taking of food. The loss of weight has been a very constant symptom. Rankin reports an average loss of twenty-eight pounds in his series. According to Rankin a rather severe secondary anemia has been a prominent symptom but in my experience and in the experience of some other writers the anemia has not been an important part of the picture, at least during the earlier stages.

I believe the reason why anemia has not been prominent in most cases is due to the type of growth which has a tendency to develop dense cicatricial constrictions rather than large ulcerating surfaces. Consequently there has been relatively small loss of blood from this type of lesion. In fact, it is quite unusual to find the story of tarry stools although in many cases it is possible by careful repeated examinations to get positive tests for occult blood.

In regard to general physical examination, there is usually nothing abnormal to be found, particularly in the early stages. Later on there is very apt to be a marked loss of weight and possibly a moderate secondary anemia. In no

case have I been able to feel anything abnormal on palpation of the abdomen, but some reports describe a typical palpable mass which is freely movable although tender and seems to slip away from under the examining fingers. The only other positive abdominal finding is a considerable amount of gas in the small intestine which often gives very marked gurgling and rumbling noises.

The x-ray is helpful from the negative standpoint in that by x-ray we can usually eliminate the question of disease in the stomach, duodenum or gall bladder for in these cases the mistaken diagnosis of peptic ulcer or gall bladder disease is often made because of a similarity in the digestive symptoms. Gotten suggests that if an x-ray is taken, a flat plate of the abdomen should be taken first before any barium is given. If this plate shows dilated loops of small intestine, then it indicates an obstructive lesion somewhere above the ileocecal valve. Under normal conditions the x-ray should not reveal gas in the small bowel.

In many cases when the lesion is high in the jejunum, the barium x-ray of the stomach and upper bowel does give a clue to the diagnosis because there is tremendous dilatation of the duodenum and first portion of the jejunum which may be differentiated from the stomach shadow. As a rule however, fairly extensive and careful x-ray studies are necessary in order to establish a diagnosis of malignancy of the small bowel. (In fact, the records show in these cases that a diagnosis is rarely made before a laparotomy is done.)

As regards the pathology of carcinoma of the small intestine, these lesions are of the adenocarcinoma type and may represent the various grades of malignancy. Grossly as I have stated, the growth is of the cicatricial ring type rather than of the large ulcerative type. This lesion causes gradually increasing obstruction of the lumen of the intestine.

In the majority of cases metastasis occurs early. Rankin states that one of every three of his cases had definite palpable metastases at the time of operation.

The treatment is, of course, purely surgical and the ideal operation is an excision of the tumor followed by an aseptic type of end-to-end anastomosis. Even though there are definite metastases present, it is just as easy and just as safe to do an excision and an end-to-end anastomosis as it is to do a side-to-side short circuit around the growth. Therefore, unless the growth is large and immovable, there is no real reason for leaving it behind. In the earlier operations of this series an excision was done, the ends of the bowel closed, and then a side-to-side anastomosis was made. However with our present technique of doing an aseptic end-to-end anastomosis, this is the operation of choice. Rankin is pessimistic regarding prognosis and states that in his series no patient has lived longer than

X-ray examination showed a resolving pneumonia on the right. The admission temperature was 102°F, pulse 85 respirations 22, blood pressure 110/70. The white blood count was 14,700 with a differential count of 84 per cent polymorphonuclears, 14 per cent lymphocytes, 2 per cent monocytes. The Kahn reaction was negative. On the third day thoracentesis of the right side posteriorly yielded 70 cc of yellowish fluid which was sterile on culture.

The signs of pneumonia persisted with a temperature ranging up to 100 for nine days. The patient's condition seemed to improve during the next five days although the clinical and x-ray signs persisted. Sputum examinations showed no tubercle bacilli. Two blood cultures showed no growth. On the nineteenth day the patient developed swelling and redness over the left side of the lower neck. At this time the temperature was 101.5°, pulse 80, respirations 22. The white count was 11,600. The neck revealed a swelling and redness over the lower neck obliterating the suprasternal notch. There was tenderness over the left lobe of the thyroid reaching up to the level of the hyoid bone. The condition was treated symptomatically. On the following day the temperature rose to 103°F, but the redness and tenderness began to disappear. The patient's general condition continued downhill with persistence of the pneumonic signs in the right lower chest and terminated in death five days after the onset of neck symptoms (Mar 11 1933).

Diagnosis—Acute Thyroiditis, Resolving Pneumonia (Right), ? Pulmonary Tuberculosis, ? Carcinoma of the Lung.

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DISCUSSION

DR. GEORGE A. MOORE, Brockton, Mass. I would like to record a case of acute thyroiditis. I saw about two years ago, a man who had spent ten years in the Panama Zone and had been treated several years after that for malaria. He had an enlarged, firm thyroid which seemed malignant. He was seen by an internist who concurred with my diagnosis. He continued to run a very high temperature and we searched for malaria many times and were unable to find it and finally operated upon him.

The thyroid was adherent to the underlying structures and I sacrificed one of the parathyroids. His convalescence was uneventful. The pathological report from Dr. Shields Warren was thyroiditis.

CARCINOMA OF THE SMALL INTESTINE*

BY HORACE K. SOWLES, M.D.†

CARCINOMA of the small intestine is rather uncommon and yet not so rare but that it may be worth while to have a little discussion of it particularly in regard to diagnosis, because it is a condition in which the diagnosis is very seldom made before operation. My interest in the subject was stimulated by the fact that due to a curious turn of chance, I happened to have seen five cases, which is, perhaps, a little unusual in the experience of one operator, the previous small groups of cases which have been reported having been gathered from the records of large clinics.

For instance, Gotten of Memphis was able to find only four cases of carcinoma of the small intestine in the records of twenty thousand patients at the Polyclinic Hospital, and Judd, reporting the cases at the Mayo Clinic up to 1919, found only seventeen. This report of Judd's was supplemented by Rankin and Mayo up to 1929 during which time they found eighteen additional cases, making a total of thirty-five

from the Mayo Clinic. In the records of the Massachusetts General Hospital, I found only six cases in the last ten years.

The literature on the subject is not very abundant and the figures in regard to the incidence of the disease show considerable variation. According to Judd, some clinics reported that as high as 3 per cent of all intestinal carcinomata were found in the small intestine. At the Mayo Clinic, however, where he had checked very carefully both the records and the pathological reports, he found that the incidence of carcinoma of the small intestine was only 0.06 per cent of all the intestinal carcinomata. The total figures from the Mayo Clinic in 1929 were 35 cases of carcinoma of the small intestine compared with 4597 of the large bowel and 4335 of the stomach.

There is no obvious explanation as to why carcinoma should be so relatively rare in the small intestine. There are various theories which may be more or less interesting but not conclusive. Some of these are as follows. Because of the fluid nature of the contents of the small bowel, there is relatively less irritation, another because of the alkalinity or other special inhibi-

*Read before the New England Surgical Society at Boston September 29 1933.

†Sowles Horace K.—Chief Surgeon Lawrence Memorial Hospital. For record and address of author see "This Week's Issue" page 971.

pital, where Dr Balch operated on him. Male, aged 35, was admitted in December, 1929 with a story of stomach trouble for five or six months. The probable diagnosis was peptic ulcer. He had a dull, gnawing type of pain and also a definite sharp pain at times which came on several hours after meals, and much gas not always related to the pain. He had suffered a few attacks of vomiting. He thought he had lost five or six pounds in the last few months. Between attacks, he felt perfectly well. Examination was negative except for a good deal of gas gurgling in the small intestine. Exploration showed a band of omentum adherent near the base of the cecum. This was drawn tightly across the lower ileum apparently causing obstruction. The ileum above this region was collapsed but on following upward along the ileum for about eighteen inches, the ileum became normal again. No pathology was felt in the region of the stomach or the rest of the abdominal cavity. He went home from the hospital three weeks after operation and was readmitted again ten days later with a story that since leaving the hospital he had been having constant abdominal cramps with some nausea and vomiting. As soon as he ate solid food it was followed by vomiting. He was re-operated one month after the first operation under the diagnosis of subacute obstruction. There was marked dilatation of the first two feet of the small intestine at which point there was a constricting growth and below it the small bowel was entirely collapsed. There were two small glands in the mesentery which were soft and movable. The growth was excised the ends of the gut were closed with purse-string sutures and a side-to-side anastomosis was done. The patient made a good recovery. The pathological report was adenocarcinoma of the small intestine grade 3. Three years after the excision of the carcinoma the patient reported that he had been losing weight for the last six months his color was bad he tired easily and had some pain in his stomach. On examination he had a moderate secondary anemia with a red count of 3 800 000. On a diet this improved slightly but he still was not well. He said that his digestion was poor and he had a good deal of gas in his stomach and occasionally some vomiting. Nothing definite could be made out on physical examination but a recurrence was suspected. The patient died of recurrence forty months after operation.

In conclusion we can say that carcinoma of the small intestine is relatively rare as compared with carcinoma of the other portions of the gastrointestinal tract. The primary symptoms are those due to an intermittent obstruction and later on loss of weight and moderate secondary anemia. The duration of the symptoms may be from a few weeks to several years and the average is about one year. The erroneous diagnosis of peptic ulcer or gall bladder disease is often made. In suspected cases repeated tests of the stools for occult blood are indicated. As a further means of making a diagnosis careful x-ray examinations should be made. Before giving barium a flat plate of the abdomen is advisable in order to determine whether or not there is pathological gas in the small intestine. Treatment is resection with end-to-end anastomosis. Prognosis according to Rankin, is poor. This small group has happened to show a somewhat better prognosis.

I thought some of you might be interested in the clamp we are using, two Kocher clamps joined together by an anchoring device on the shank, and the bowel can be cut off with a cautery close to the clamp, making aseptic ends. Then the ends can be sewed, and the clamps withdrawn. This is a clamp which has been devised by Dr Young.

DISCUSSION

DR. PHILEMON E. TRUESDALE, Fall River, Mass. Dr Sowles has described all the important features of this condition. He has made it clear that there is difficulty in making the diagnosis. My experience is limited to one case. The patient was a woman, forty-five years of age, who entered the hospital in August, 1914 with a diagnosis of acute intestinal obstruction. It had been stated in the history that she had other attacks of a similar nature but not so severe.

On physical examination the upper abdomen was distended but the lower portion of the abdomen was not distended. Naturally, we thought of pyloric obstruction but the patient vomited bile. Then we considered pancreatitis but when the stomach was deflated with a stomach tube, no mass could be felt. Yet this patient was very sick. We operated upon her, expecting to find pyloric obstruction. There was no obstruction at the pylorus, no sign of ulcer, nothing abnormal about the gall bladder, and the pancreas was normal. In exploring the abdomen further I happened to come upon a small mass about as large as an English walnut and brought it to the surface. It was an annular carcinoma of the jejunum. It was resected and an end-to-end anastomosis was made. The patient recovered. I have examined her record and found that she died one year later from metastasis to the liver.

In these cases especially when the intestine is obstructed I doubt if the diagnosis can be correctly made before operation. In fact, the surgeon is fortunate if he finds the lesion during operation. The element of chance as in my case, plays an important part in the discovery of the tumor.

The illustration* represents the specimen of the jejunum resected in the case reported above. The carcinoma appears in the form of an annular growth constricting the intestinal lumen at the center of the specimen.

DR. ALFRED M. ROWLEY, Hartford, Conn. I have enjoyed Dr Sowles' presentation of this subject. I think he has had an unusual experience meeting five such cases. Certainly carcinoma and carcinoid intrinsic tumors of the small bowel are comparatively rare. Extrinsic tumors, metastatic tumors are not so rare.

Why the rarity? Dr Sowles has spoken of the alkalinity. This does not entirely satisfy as some of the appendages to the small bowel such as the biliary ducts are subject to intrinsic intraductal carcinomata. We have met three such cases in the last three years. Also we had one case of carcinoma of a patient with persistent mesenteric duct. Embryologically the small bowel is a primordial structure. This may possibly explain its greater resistance to disease.

I have reviewed the number of cases that we have had at the Hartford Hospital in the last eight years. This represents exclusive of eye, ear, nose and dental work about 40 000 operations and approximately 15 000 laparotomies. We have had two carcinomata,

*Not submitted for reproduction.

three years. The average length of life following operation has been less than a year.

In connection with the above, I wish to report the following case histories:

I. Female, aged 46, was admitted to the Lawrence Memorial Hospital in Medford May 17, 1926 with the following story. During the last three to four years she had lost considerable weight, had been troubled with gastric distress, and had vomited at times. She had never vomited any blood and had never noted any dark colored stools. She complained of no other symptoms. She was given x-ray studies, including a barium meal and Graham test for gall bladder disease. These showed a persistent constriction over the greater curvature of the stomach which was diagnosed as a probable carcinoma of the stomach. The gall bladder failed to visualize. Under the diagnosis of probable carcinoma of the stomach, a laparotomy was done. The stomach and duodenum were normal. The duodenum was somewhat dilated but the rest of the intestinal tract was apparently normal. The gall bladder was large and thickened and contained stones. The gall bladder was removed. The pathological report was cholecystitis and cholelithiasis. The patient made a comfortable convalescence and was discharged fourteen days after operation. The day before she went home she complained of nausea, vomited once, and said she had gas pains in the epigastrium. After discharge from the hospital the troublesome gas pains and vomiting continued. The vomiting became more severe until it occurred after nearly every meal. She finally was readmitted to the hospital six weeks after discharge with a diagnosis of subacute obstruction. Visible peristalsis could be seen in her upper abdomen after anything was taken into the stomach. An exploration was made under a diagnosis of intestinal obstruction. The jejunum and upper ileum were tremendously dilated. There was a small annular growth in the upper ileum causing apparently nearly complete obstruction. This tumor was excised, the ends of the bowel closed, and a lateral anastomosis was done. The pathological report was adenocarcinoma of moderate malignancy. The patient made an uneventful recovery. She is perfectly well at the present time, seven years after operation and weighs forty pounds more than she did when she left the hospital.

II. Female, aged 36, admitted to the Faulkner Hospital March 11, 1930. Her chief complaint was pain in the epigastrium with persistent nausea and vomiting. The duration of the symptoms was seven months for which time she had been troubled with marked indigestion, severe intermittent gas pains, and very marked loss of weight. She vomited everything that she ate. Laparotomy was performed. The upper ileum was tremendously distended down to a point where there was a constricting growth at about the mid portion of the ileum. Below this growth, the ileum was collapsed. This tumor was excised, the ends of the bowel were closed with purse-string sutures, and a side-to-side anastomosis made. The pathological report was adenocarcinoma, grade 3. The patient made a fairly good recovery, complicated by an acute phlebitis of the leg, and was finally discharged thirty days after operation. She did very well for two years and then began to have a recurrence of symptoms. She had nausea and vomiting after every meal so that she could not bear to take any food because of the discomfort which immediately followed. During six months she had lost weight steadily, going from 130 to 85 pounds. She was readmitted two and a half years after the first operation and after taking twenty four hours in

which to overcome her extreme dehydration by means of intravenous glucose solution and subcutaneous salt solution, an exploration was made. There was a large, hard, nodular mass involving the retroperitoneal region about the head of the pancreas and behind the duodenum. Pressure from this mass caused practically complete obstruction of the third portion of the duodenum. It was impossible to remove the mass and a posterior gastroenterostomy was performed to relieve the obstruction. She made a fairly good recovery although continuing to have occasional attacks of nausea while in the hospital, but she gained a little weight and was discharged three weeks after operation. She died four months later, thirty four months after the first operation.

III. Male, aged 43, was admitted to the Massachusetts General Hospital in June, 1931 with a story of vomiting for eleven months and more recently vomiting of everything which he had taken into his stomach. He had lost twenty four pounds in weight. Physical examination was negative and the first impression was probable gall bladder disease or ulcer of the duodenum. He was studied for some little time on the medical side with repeated x-ray examinations. The first barium meal showed a small residue in the stomach at the end of twelve hours and showed some definite spasm of the stomach and duodenum. The x-ray interpretation was definite secondary signs of ulcer, but no filling defect and no definite ulcer were seen. The gall bladder x-rays were negative. A week later another barium meal was given. This time they could distinguish a very much dilated jejunum which partially obscured the shadow of the stomach and a diagnosis was made of an obstruction in the upper jejunum. He was transferred to the surgical side and was operated on July 2, 1931. The upper jejunum was tremendously dilated. There was a constricting tumor of the jejunum about twelve inches from the ligament of Treitz, no palpable metastases in the mesentery, and no sign of metastases in the liver. This tumor was excised and an end-to-end anastomosis was done by means of the Young clamp. The patient made a very uneventful recovery and started to gain weight while still in the hospital. He was discharged two weeks after operation. The pathological report was adenocarcinoma of high grade malignancy. At the present time, twenty six months after operation, the patient reports that he is perfectly well.

IV. Male aged 35, admitted to the Lawrence Memorial Hospital May 18, 1933 with a diagnosis of acute appendicitis. Ten days before admission he had been seized with abdominal pain in the right lower quadrant accompanied by nausea and vomiting. This subsided after a day but the soreness remained. There was another attack of pain the day before admission but less severe. He was seen by his local doctor and sent into the hospital where he was admitted with a temperature of 99.2, pulse 90, respiration 22, white count 12,400. There was definite tenderness and spasm over the right lower quadrant. He was operated on under the diagnosis of subacute appendicitis. The appendix was swollen and edematous but there was a mass two inches in diameter involving the middle ileum with numerous metastatic mesenteric glands and numerous nodules in the liver. A specimen was removed for diagnosis but resection was not done because the disease was evidently inoperable and there did not seem to be any imminent danger of obstruction to the ileum. The pathologist reported adenocarcinoma, grade 3. The patient died three months later.

V. The last case is not my own but one that I saw with Dr. F. G. Balch, Sr. at the Faulkner Hos-

EXCISION OF THE THORACIC OESOPHAGUS
FOR CARCINOMA*

With Construction of an Extra-Thoracic Gullet

BY GEORGE GREY TURNER, M S I

THE patient was a man 58 years of age, one of the best type of North country miners, who was always bright and cheerful and anxious to coöperate in every way with those in charge of his case. He gave a history of difficulty in swallowing of only eight weeks' duration. His complaint was that solid food appeared to stick at the lower end of the breast bone, and that he could only manage to swallow foods of the consistency of porridge and well-masticated bread. After treatment from his

attempt to carry out the operation for the removal of the thoracic oesophagus by the pull-through method which I described in my Henry Jacob Bigelow lecture ‡

On Friday April 28th under general anaesthesia, the abdomen was opened by a high median incision. The left lobe of the liver was separated from the diaphragm and the abdominal oesophagus exposed. About 10 ccm of a ½ per cent solution of novocain was injected through the hiatus into the oesophageal tunnel in the hope of displacing the pleura out of harm's way. The peritoneum in the neighborhood of the hiatus having been incised the finger was inserted into the posterior mediastinum and enucleation of the oesophagus commenced. I found that I could carry my finger all round the growth but I could not get above it. Having accomplished as much as possible by this route the venue was changed to the neck. The cervical oesophagus was exposed through a transverse incision dividing the sternomastoid. By working downwards with the finger in the cellular tissue I was able to reach the upper limit of the growth and to separate the oesophagus from its connexions down to that point. The gullet was then ligatured and divided low in the neck and the upper end was brought to the surface through an independent button-hole incision to the margins of which it was carefully fixed. The division of the oesophagus was made with the cautery and its cut end and the upper part of the tunnel were well smeared with Bipp. The ligatured end was allowed to retract into the mediastinum and the neck wound was carefully closed. A return was now made to the abdomen but on drawing on the oesophagus it was found to be still firmly attached. With the fingers working in the posterior mediastinum it was eventually completely loosened the left vagus nerve being divided with the scissors low down while the right nerve was not seen though it may have been torn through. At this stage it was clear that a hole had been torn into the right pleura and that air was rushing very freely into the chest cavity. This was arrested by stitching the left lobe of the liver over the oesophageal hiatus like a lid. The oesophagus was then ligatured at the cardia and cut away the stump being carefully buried in the stomach by a series of purse-string sutures. The patient made a very good recovery from this operation and without any unusual disturbance. After four weeks he was ready to go home to complete convalescence.

On June 20th he returned to the hospital and on the 25th I carried out the first stage of the operation for the construction of an antethoracic oesophagus. This was carried out by making a tube from the skin of the front of the chest for the middle portion after the plan devised by Rovsing of Copenhagen. The lower end was completed by the Tarvel method using an isolated portion of jejunum for the purpose. The orifice of the upper end of the oesophagus at the root of the neck was connected with the skin tube by a further skin plastic operation. During convalescence the patient developed a fistula at the junction of the skin tube with the intestine and



FIG 1 Radiogram showing constricting neoplasm in middle of oesophagus.

own doctor he improved a little, but the disability was really progressive for during the eight weeks he had lost no less than 3 st in weight. There were no external physical signs whatever, but the x-ray appearances were characteristic of a constricting neoplasm of the middle of the oesophagus (Fig 1).

On April 5th of this year (1933) gastrostomy was carried out and at the same time it was determined that there were no secondary deposits in the liver or in the glands along the lesser curvature of the stomach. The man commenced to pick up immediately. After careful consideration I determined to

Reprinted from *The Lancet* December 9 1933 p 1315

*Turner George Grey—Prof ssor of Surgery University of Durham. For record and address of author see *This Week's Issue* page 91

one sarcoma and one carcinoid tumor of the small bowel

Pathologically, it may be difficult to distinguish diffuse carcinomata from sarcomata. One of our cases was difficult to classify. However, it was reported on by our pathologist and confirmed by Dr Ewing as a large cell carcinoma and not a sarcoma.

DR WALTER C SEELYE, Worcester, Mass. The case at hand is interesting in that the terminal metastasis was a carcinoma of the small intestine. This was a young woman only twenty-two years old who came in on the first occasion with a complete obstruction due to carcinoma of the transverse colon which was resected and an end-to-end anastomosis made with perfect recovery. Two years subsequently she came in with a large tumor filling the entire pelvis, extending above the umbilicus. Operation revealed a large ovarian tumor which was a metastasis from the transverse colon tumor, showing colloid carcinoma. This was removed, the other ovary and tube were normal and no other abnormalities were found in the abdomen.

Within a year after that time she came in again presenting identically the same picture as the last, with the pelvis and lower abdomen full of a tumor the same size as the first one. This was removed and found to be a tumor of the other ovary similar to the first one, and with identical pathology.

A fourth metastasis occurred about a year later causing complete obstruction from carcinoma in the ileum. That showed an annular carcinoma of small size and this in turn was resected with an end-to-end anastomosis, relieving her of the obstruction, but in this last operation the abdomen showed besides this annular carcinoma of the ileum, a marked and diffuse carcinomatosis of the peritoneal cavity.

DR ERNEST M DALAND, Boston, Mass. I looked up the records of the Pondville State Hospital. There were 3800 cancer cases with 450 autopsies. There was no case of cancer of the small intestine.

DR GEORGE A MOORE, Brockton, Mass. I should like to ask Dr Sowles if he found any records in the literature of primary carcinoma of the small intestine causing intussusception. In 1929 I saw a man of seventy-five who had primary adenocarcinoma of the ileum causing intermittent obstruction for about six months, and finally an intussusception. At operation excision and end-to-end anastomosis were done with an uneventful recovery.

Kasemeyer in 1912 stated that in a series of 199 cases of intussusception resulting from tumors, 85 were malignant in origin.

DR TRUESDALE. What part of the ileum?

DR. MOORE. About three feet from the ileocecal valve.

DR FRED B LUND, Boston, Mass. Unless I am mistaken, a not uncommon location of intestinal carcinoma has been the fourth portion of the duodenum. I had one such case where the resection was difficult on account of the depth. I have seen many intussusceptions caused by tumors of the intestines, one of them showing two such intussusceptions. A man came in to the Carney Hospital two or three years ago, looking as if he had suffered from malignant disease for a long time. He had acute intestinal obstruction and we found two intussusceptions, both of the jejunum, and resected them. The tumors were quite black and the pathologic report was melanotic sarcoma of the small intestine, producing the intussusceptions. Melanotic tumors are usually metastatic from disease of the eye. His eyes were normal. He went home and lived about a month, and the primary source was never found.

DR HORACE K. SOWLES, Boston, Mass. I was hoping Dr Miller might say a word on this because I happen to know he has been over the records of the Massachusetts General Hospital very carefully and checked up the pathological reports on all cases, and I believe he told me some little time ago that he was able to find in all about fourteen in his entire review.

It is rather interesting that two of these cases were operated upon without finding the lesion, and I think Dr Truesdale will probably confirm my statement that it would be very easy to overlook one of these little tumors of the small bowel if you didn't have a pretty definite suspicion it was there. You can run your hand very easily through the abdomen without touching it, and that is what happened in two of these cases, because in one case there was no suspicion of its being there and in the other case apparently adequate cause was found for the obstructive symptoms.

About the question of intussusception, I didn't find any particular mention of that in the literature, but it seems perfectly logical mechanically that a tumor of this sort, a small, constricting carcinoma or fibrosarcoma could easily cause intussusception. A tumor of the small bowel I should suspect might be the most common cause of it in adults. As to the fibrosarcomas and the sarcoma type of tumors according to the literature they are also rare probably with about the same degree of frequency as the carcinomata.

In regard to carcinomata of the duodenum, I did not consider those in my paper. Carcinoma of the duodenum, especially at the papilla, is not uncommon. Whether it originates in the biliary ducts or intestinal mucosa is sometimes a question.

MORTALITY RATES

Telegraphic returns from 86 cities, with a total population of thirty-seven millions for the week ending April 14 indicate a mortality rate of 12.4 as against a rate of 11.1 for the corresponding week of last year. The highest rate (20.4) appears for Richmond, Va., and the lowest (4.3) for Yonkers, N. Y. The highest infant mortality rate (20.9) appears for El Paso, Texas, and the lowest for Canton, Ohio, Fort Worth, Texas, Oakland, Calif. and Schenectady, N. Y., which report no infant mortality.

The annual rate for 86 cities is 12.6 for the fifteen weeks of 1934 as against a rate of 12.1 for the corresponding period of the previous year.

SUMMARY OF DEATHS AND DEATH RATES (ANNUAL BASIS)
FROM AUTOMOBILE ACCIDENTS PER 100,000 ESTIMATED
POPULATION FOR 86 CITIES FOR CORRESPONDING PERIODS
OF 1934 AND 1933

	Week ending April 14		First 15 weeks	
	1934	1933	1934	1933
Total deaths ———	150	128	2,381	2,090
Death rate ———	20.9	17.8	22.1	19.4
Deaths due to acci-				
dents in city ———	119	103	1,948	1,691
Death rate ———	16.6	14.4	18.1	15.7

—Bureau of the Census

few years They have been almost unanimous in showing better results with the low cervical type than with the classical section

It may be interesting to give briefly the incidence as it occurs in various localities Humpstone¹, shows a frequency of 1 in 22 in Brooklyn Adams², 1 in 89 in Portland, Oregon Skeel and Jordan³, 1 in 44 in Cleveland Johnston and Smith⁴, 1 in 36 in Texas Greenhill⁵, 1 in 48.5 from the Chicago Lying-In Hospital Preissecker⁶, in Vienna a percentage of 3.08 Where yearly reports have been followed it is found (Hawks⁷, Ilkewitz and Seltzky⁸ and Courtiss and Fisher¹³) that the incidence has risen markedly in the last decade as compared with the previous one The incidence, with the exception of those hospitals having an organized home district, may be higher than that of the community at large

The mortality from the operation as published from various centres is as follows Preissecker⁶ (Vienna) gives 5.7 per cent gross for classical sections, laparotrachelotomies and extraperitoneal operations combined Seeley⁹ shows a mortality in the city of Detroit up to 1925 of 13 per cent, and since then to 1930 of 4.43 per cent Skeel and Jordan³ found in Cleveland a 7.6 per cent mortality in 827 classicals and 2.8 per cent in 108 cervical sections Humpstone¹ has 4.3 per cent Hawks⁷ (New York) reported 3.6 per cent for 582 cases of both types Thompson¹⁰ reports from Los Angeles 1322 cases of both types with a mortality of 4.2 per cent The range was from none to 9 per cent according to the hospital Phaneuf¹¹, reports 4.18 per cent personal cervical sections with a gross mortality of 5 per cent and 193 transverse low cervical operations with 3 per cent gross mortality At the Chicago Lying-In Hospital Greenhill⁵ analyzed 874 cervical sections (1.26 per cent mortality) and 147 classical (4.76 per cent mortality) E. v. Ammon¹² collected figures from a thorough review of the American and German literature There were 5,865 laparotrachelotomies (4.1 per cent gross and 2.1 per cent corrected mortality), and 2,685 classical operations (5.9 per cent gross and 2.6 per cent corrected mortality) Courtiss and Fisher¹³ (Boston) report from 1911 to 1919, 214 classical sections (10.2 per cent mortality), from 1920 to 1931, 376 low cervical sections with 1.33 per cent mortality, and 409 classical sections with 6.4 per cent mortality

During the years 1924 to 1932 inclusive there were performed at the Cambridge Hospital, Cambridge, Massachusetts and St Elizabeth's Hospital, Brighton, Massachusetts, four hundred and thirty-six cesarean sections These were performed by forty-four different operators There were, during this period, thirteen thousand one hundred and fifty-four deliveries The incidence of section is then, approximately one in thirty The indications were as follows

Repeat	124
Disproportion, vertex presentation	91
Disproportion, breech presentation	9
Toxemia (nephritis 4 cases)	37
Placenta previa	27
Eclampsia	20
Previous repair	13
Heart disease	6
Separation of placenta	14
Fibroids	5
Inertia uterus	4
Elderly primipara	4
Elderly primipara breech	2
Miscellaneous	14
	<hr/>
	370
Not specified	66

The types of anesthetics, and the frequency of their employment are as follows

Ether	381
Spinal	31
Novocain infiltration	20
Avertin	2
Morphia and gas oxygen	1
No anesthetic (coma)	1
	<hr/>
Total	436

There were no deaths directly attributable to the anesthetic

In the four hundred and thirty-six cases there were twenty deaths, a mortality of 4.6 per cent Eliminating two moribund eclamptics and a case of Addison's disease practically moribund the corrected mortality is 3.9 per cent. Contrasting the two types of operation, classical and low cervical, we find two hundred and ninety-six classicals with twelve deaths, or 4 per cent Correcting for the above-mentioned three cases all of which occurred in the classical series we have nine deaths or 2.1 per cent mortality for the classical section There were one hundred and thirty-three low cervical cases with seven deaths, or 5.3 per cent mortality No corrections were necessary There were three Hirst cases with one death and four sections plus hysterectomy with no deaths

There were four hundred and forty-three babies twins occurring in seven cases There was a gross fetal mortality of forty-two cases, 9.5 per cent The causes are as follows (1) Prematurity, seventeen cases (2) Stillborn sixteen cases The cause was unknown in three of these Maternal hemorrhage accounted for four Eclampsia caused four Toxemia resulted in five (two babies had edema and one probable septicemia) (3) Cerebral hemorrhage caused two deaths (4) Monstrosities occurred twice (5) Congenital heart was diagnosed twice (6) Pylorospasm and skin infection accounted for one case (7) There was one case of myelogenous leukemia. Autopsy was performed in three cases (7 per cent)

The following factors were analyzed (1) distention, (2) morbidity, (3) morbidity after a trial of labor, (4) the maternal mortality and morbidity, and the fetal mortality in placenta

this required two operations for its repair. On the 206th day after the excision of the oesophagus the patient ate a meal consisting of three slices of bread and butter with a poached egg, half a pint of tea, and two pears (Fig 2). This he enjoyed thoroughly.



FIG 2 Patient enjoying a high tea some seven months after the excision of his oesophagus

ly and in his own words "he was able to swallow it just as well as ordinary." The specimen (Fig 3) is a beautiful example of a comparatively localised squamous-celled carcinoma, and though it has invaded the muscular wall, there is no evidence of extension beyond

Of course it is obviously far too soon to judge of the result from the point of view of the treatment of malignant disease, but this case at least

shows that the operation which I have for so long had in mind can be carried to a successful issue and it does demonstrate the great value of the

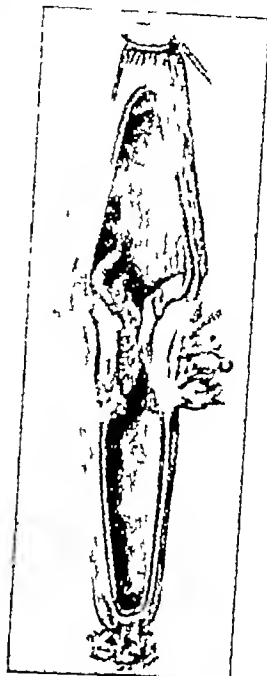


FIG 3 Showing comparatively localised growth in excised oesophagus

plastic construction of a new gullet outside the chest

The Lancet Office,
7, Adam Street, Adelphi, WC 2

CESAREAN SECTION A REVIEW OF FOUR HUNDRED AND THIRTY-SIX CASES

BY CORNELIUS T O'CONNOR, M.D.*

IN a review of cesarean section where a comparison is being made of the different types of operations it would seem that several factors must be considered if the analysis is to have value (1) The series, if the classical and low cervical types of operation are to be compared, should be contemporaneous. A comparison of the results of classical section done, for example, from 1905 to 1920 with the results of laparotrachelotomies done from 1925 to 1932 is not fair to the older operation. Refinements in operative technique have been made. Almost everywhere the incidence has increased so that elective sections, or sections early in labor are done more frequently (2) If a clinic reserves the classical section for those cases where speed is essential, e.g., eclampsia, heart disease, placenta previa, etc., its classical group comprises poorer risks as compared with the low cervical, unless

the latter shows a definitely greater incidence of ruptured membranes, longer labors or other factors that would increase the chances of infection (3) A comparison of cases having a test of labor is necessary (4) One should not consider the mortality and morbidity reports of highly skillful operators or well organized maternity clinics, and compare these results with those of city surveys that embrace every degree of prenatal care, organization and operative ability, and then attempt to draw conclusions favorable to one or the other type of operation (5) The gross mortality should be stated. It seems only sensible to subtract fatalities when the patient is moribund, or practically so, before the operation. "Corrections" made for deaths after operation should be done carefully if at all. When made, the details should be stated so that the reader may have access to all the facts.

Many series have been reported in the last

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sections did not have so good a test of labor as the seven classical cases

The classical group with marked sepsis consists of eleven cases with data in seven. All seven had ruptured membranes, were in labor a long while, and were examined vaginally. Of the three deaths, occurring in these classical sections that had a test of labor, all came in the markedly morbid group. Four low cervical cases had marked sepsis. One had repeated attempts at delivery at home. One had ruptured membranes for five days. One had a long labor and unruptured membranes. In both classical and

4 (b) *Eclampsia* 20 cases

There were nineteen classical sections. There was one Hirst operation. The maternal mortality was five, or 20 per cent. Inasmuch as two were moribund the corrected mortality is 16 per cent. Marked distention was very common in these cases and the convalescence as a rule quite stormy. Five babies died, or 25 per cent.

4 (c) *Separation of Placenta* 14 cases

A toxemia was definitely present in eight instances. In three there was no toxemia. The presence or absence was not noted in two, and

TABLE 3
MORBIDITY OF CASES IN LABOR

Classical 44				Low Cervical 27			
Afebrile	Morbid			Afebrile	Morbid		
	Slight	Moderate	Marked		Slight	Moderate	Marked
17 (39%)	6 (11.5%)	10 (23%)	11 (25%)	15 (55.5%)	4 (15%)	4 (15%)	4 (15%)

low cervical types where marked sepsis followed, labor was long in all cases, membranes were ruptured a long while except in one instance, and vaginal examinations had been made often.

If one subtracts the results of those cases in labor from the whole group, the morbidity of those cases that did not have a test of labor will be shown. There is found a difference of four per cent in favor of the cervical section. The greater difference in the group as a whole is then, accounted for by the group that had a test of labor.

another case, labeled separation of the placenta, had a bicornate ruptured uterus, and really comes under the heading, Rupture of the Uterus. There were no maternal deaths. Ten infants died, 70 per cent. Eight were stillborn and two died shortly after birth from prematurity. There were eight classical sections. Seven were afebrile. Four of these were noted as toxic. One had moderate morbidity with phlebitis. There were two cervical sections. Both were toxic. One was afebrile, and one showed moderate morbidity. Three had hysterectomies. Two were afebrile and one had a slight fever. One case

TABLE 4
(A) PLACENTA PREVIA—27 CASES

Classical 19				Low Cervical 8			
Afebrile	Morbid			Afebrile	Morbid		
	Slight	Moderate	Marked		Slight	Moderate	Marked
9 (47.7%)	4 (21%)	3 (15.1%)	3 (15.1%)	6 (75%)	0	2 (25%)	0

There was one death (3.7 per cent). Nineteen were classical sections with one death (5 per cent). Eight were low cervical cases with no deaths. Forty-seven and seven-tenths per cent of the classical were afebrile as compared with sixty-one per cent in the whole group of classical sections, and thirty-nine per cent in those which had a test of labor. In each of the three classes of morbidity, slight, moderate and severe, there was one case packed. In the two low cervical cases with moderate morbidity neither was packed. One, however had a vaginal examination at home, and the other entered the hospital with ruptured membranes.

The fetal deaths were five, approximately 18 per cent. The low cervical group showed less morbidity than the classical.

was toxic, one non-toxic, and one a case of bicornate uterus.

4 (d) *Toxemia* cases 37—deaths 4, or 10.8 per cent

There were 21 classical sections with one death—5 per cent.

There were 14 low cervical sections with three deaths—21.4 per cent.

There was one Hirst section with no death. There was one hysterectomy with no death. Table 5 shows the morbidity.

There is practically no difference to be noted between the two types of operation. Nor is there to be noted any significant difference between this group and the group as a whole (see table 2). In the classical group of twenty-one

previa, toxemia, separated placenta and eclampsia

1 Distention

In two hundred and eight cases the surgeon's notes and nurse's bedside charts were carefully followed in order to determine the relative incidence, and degree of distention in both types of operations. These were taken from only one hospital, as the nurse's notes were considered essential in getting a proper evaluation of this factor, and these notes were present in only one of the two series. The division was made into (1) none or practically none, (2) slight to moderate, and (3) marked. This division is necessarily subjective. By following the daily notes carefully the attempt has been made to have the division as accurate as possible. It is impossible to separate slight from moderate in some cases, and so they have been grouped together. Table 1 shows the results.

Morbidity was then analyzed in those cases which had had a test of labor (Table 3).

There were seventy-one cases which had a test of labor. There were forty-four classical sections with three deaths (7.5 per cent). There were twenty-seven low cervical cases with three deaths (11.5 per cent). The morbidity was less following the low type of operation. The details are as follows. In the seventeen afebrile classical cases the record is present in twelve. In eleven, labor was slight. In one case labor lasted twenty-four hours. Two cases had vaginal examinations and two had ruptured membranes (one for sixteen hours, and another for twenty-four hours). The last was also one of the two cases in which vaginal examinations were done. In the fifteen afebrile low cervical cases an opinion as to labor could be formed only in six cases. It varied from twelve to forty-eight hours. The membranes were ruptured in only one case, and in this case they had been ruptured for many

TABLE 1

DISTENTION

	Classical			Low Cervical		
	None	Slight to Moderate	Marked	None	Slight to Moderate	Marked
Total 211 cases	15	117	22	7	41	9
Classical 154	(10%)	(75%)	(14%)	(12%)	(72%)	(16%)
Low Cervical 57						
Cases in Labor 48	1	19	8	1	14	5
Classical 28	(4%)	(68%)	(28%)	(5%)	(70%)	(25%)
Low Cervical 20						

No great difference was found in the amount of distention occurring either in the total series, or in those cases that had been in labor.

Morbidity was the second feature analyzed. Any case showing a temperature, after the first forty-eight hours, of over one hundred degrees for twenty-four hours (bi-daily readings) was considered morbid. Table 2 illustrates this factor for the whole group.

TABLE 2

MORBIDITY (WHOLE GROUP)

Classical 303			Low Cervical 133		
Afebrile	Moderate	Marked	Afebrile	Moderate	Marked
185	74	39	95	22	14
(61%)	(21%)	(18%)	(72.5%)	(17%)	(11%)

There was less morbidity in the low cervical group. In the classical group with moderate morbidity one had coryza, two bronchitis, two mastitis, one pyelitis, one sinusitis and six wound infections, one of these resulting in a utero-abdominal sinus which closed two weeks after discharge from the hospital. The same group in the low cervical type revealed two wound infections, and one case of pyelitis. No other possible extragenital causes were found in the morbid groups.

hours. As compared then with the afebrile classical group labor was longer in the afebrile cervical sections.

A comparison of the febrile groups gives the following data. In the classical group with slight morbidity the record is good in three. The membranes were unruptured in all. Two had a twenty-four hour test of labor, and one of these had two vaginal examinations. One had slight labor. Putting against this group the same in the low cervical type, the four cases give data as follows. Three had long labor and membranes ruptured for a long while. The fourth had unruptured membranes, but a forty-eight hour labor and one vaginal examination. In those cases, then, which had slight morbidity, the low cervical group had a longer test and greater incidence of ruptured membranes than did the classical group.

The classical sections with moderate morbidity amounted to ten cases with data for seven. All had a long labor. Four had ruptured membranes, one with a forceps attempt. Three had vaginal examinations. The low cervical group followed by moderate morbidity comprised four with data in two. Both had short labors with unruptured membranes. One of these two had a vaginal examination. In this group, then, followed by moderate morbidity, the two cervical

hours X ray showed large baby (8 lbs 12 ozs) Died one hour after operation. Uterus firm No bleeding Low cervical section (ether) (? cause of death)

13 Primipara. Aet. 21 Funnel pelvis Good test of labor Floating head. Classical section under ether Temperature and respiration elevated next day Definite signs of pneumonia. Died on fourth day of lobar pneumonia of left lung Type undetermined

14 Primipara Aet. 41 Slight labor with one vaginal examination Membranes ruptured four and one-half hours (Baby 9 lbs 7 ozs) Died of diffuse peritonitis on the fifth day Classical section under ether

15 Primipara Aet. 27 Fifteen hour labor Fully dilated Repeated attempts at delivery at home Low cervical section under ether Baby died of cerebral hemorrhage Mother died on the fourth day with diffuse peritonitis

16 Para 2 Aet. 30 Labor lasted forty hours Membranes ruptured thirty hours One vaginal examination. Classical section under ether Still born baby Died on the fourth day of septicemia.

C Placenta Previa

17 Para 2 Aet. 33 Flowed at home for fourteen hours before operation One vaginal examination Stillborn baby Classical section under ether Died six hours after operation from shock from hemorrhage. No transfusion

D Elective, Non-Toxic and Not Flowing

18 Para 2 Aet. 44 Funnel pelvis. Previous difficult labor Low cervical under ether Died on eighth day with diffuse peritonitis

19 Para 2 Aet. 30 Low cervical under ether Baby 8 lbs. 8 ozs Patient went into shock at end of operation No external hemorrhage Uterus firm Died a few hours later

20 Para 4 Aet. 31. Repeat. Low cervical under ether Pulse weak immediately after return to room Flowing freely Air hunger and cyanosis. Died three hours after operation. Cause of death evidently shock from hemorrhage

SUMMARY

1 In an analysis of 436 cesarean sections the incidence was 1 in 30

2 Ether was the anesthetic in most cases

3 The gross mortality was 4.6 per cent With the elimination of three patients, moribund before operation, it was 3.9 per cent For 296 classical sections it was 4 per cent, corrected for the above three, to 2.1% For the 133 laparotomies it was 5.3 per cent Fifty per cent of the deaths occurred in toxic patients, thirty per cent in those who had been in labor, five per cent in placenta previa and fifteen per cent in clean, elective, non-toxic patients in good condition

4 No difference in the frequency of occurrence or degree of distention was noted in 208 cases (154 classical and 54 low cervical)

5 The morbidity was less following the low cervical group, both for the whole group and those having a test of labor, but there was little differ-

ence noted in those cases that had not had a test of labor The slight difference was in favor of the low cervical group

6 Neither operation was safe when labor had been long membranes had been long ruptured, and vaginal examinations had been made

7 The mortality in 27 placenta previa cases was 3.7 per cent maternal, and 1.8 per cent for the babies

8 The maternal mortality in 20 eclampsia cases was 20 per cent (corrected 1.6 per cent) Recovery was usually stormy The fetal mortality was 2.5 per cent

9 There were no maternal deaths in 14 cases of separated placenta, 70 per cent of the babies died

10 In 37 cases of toxemia 21.6 per cent of the babies died There were 21 classicals with one maternal death and 14 cervicals with three maternal deaths All deaths occurred in the markedly toxic patients

11 There was a gross fetal mortality of 9.5 per cent

12 There were 203 classical sections in patients not in labor, not toxic and not flowing, 1.1 per cent in sections of elective clean cases in good condition, with no maternal deaths There were 82 low cervical sections in the same class with three deaths (3.7 per cent mortality)

13 There were 93 classical operations in patients who either had had a test of labor were toxic, or had antepartum bleeding with twelve deaths (three moribund before operation) a corrected mortality of about 10 per cent The low cervical operation comprising the same type of case resulted in four deaths in 51 cases (8 per cent)

14 Autopsies were done on two (10 per cent) of the mothers and three (7 per cent) of the babies

15 The individual deaths are summarized

COMMENT

The low cervical section should show less morbidity than the classical in those patients who have had a test of labor However those who have had a long labor with rupture of membranes for a long while, and especially with vaginal examination or attempts at delivery, are not good risks with either operation

The mortality of 1.6 per cent in the cases of eclampsia is lower than some other series, e.g., Gordon¹⁴ with 2.6 per cent, in 104 cases, and Miller¹⁵ with 1.9 per cent in 31 cases. Holland¹⁶ found 3.2 per cent In the 20 cases reviewed by the writer, morbidity was so common and so frequently severe, distention so marked and the recovery so frequently a stormy one, that the mortality might easily have been greater It would seem in view of the lower mortality in eclampsia treated conservatively,

cases only one had been in labor. Another had ruptured membranes for an indeterminate period with two vaginal examinations. In the group with marked fever there was one case of extrusion of the bowels. In the cervical group of fourteen, two cases had been in labor. One of these had ruptured membranes.

Eight of the babies died (21.6 per cent). Four were stillborn. One died of cerebral hemorrhage on the tenth day. Three were premature. The incidence of distention was noted in ten

2 Para 3 Aet. 27 Pregnancy eight and one-half months. B P 160/90, Urine boiled solid. Elective low cervical section under ether. Temperature elevated from the second day. Died on the fourth day from septicemia with no evidence of peritonitis.

3 Primipara. Aet. 26 Hypertension, 175/110. No albumin. Mitral stenosis decompensated. Not in labor. X-ray shows twins. Classical elective section under ether. Died in forty-eight hours of cardiac decompensation with marked vomiting and distention.

TABLE 5
TOXEMIA—37 CASES

Classical				Low Cervical			
Afebrile	Morbid			Afebrile	Morbid		
	Mild	Moderate	Marked		Mild	Moderate	Marked
14 (66%)	2 (10%)	2 (10%)	3 (14%)	9 (64%)	1 (8%)	2 (14%)	2 (14%)

classical sections. Marked distention occurred twice. In nine low cervical cases, marked distention occurred once. The first case had moderate morbidity. The hysterectomy was interesting a few hours after classical cesarean operation the blood pressure fell, the pulse rose and the uterus enlarged. The abdomen was reopened, and a typically apoplectic uterus removed. Recovery was complicated by pneumonia and marked distention.

The degree of toxemia was noted in thirty-three of the thirty-seven cases. In eleven of twenty classicals it was marked, and in eight moderate. Two of the latter were cases of hypertension and valvular lesions with only a little albumin.

The toxemia was marked in five out of eleven low cervical operations, moderate in five, and mild in one. The four deaths all occurred in the markedly toxemic patients, one having in addition mitral stenosis and dying of heart failure forty-eight hours after delivery. Four of the cases could be labeled definitely as nephritic.

A review of these cases shows that there were complicating factors in many instances such as previous repairs, a history of former disasters to the baby, heart disease, transverse presentations, small pelvis, large babies, and sometimes the rapid progress of toxemic symptoms in spite of treatment. Most of the patients were either primiparae or patients who had previous difficult labors. The average age was thirty. Eight babies died, or nearly 22 per cent. Most of these were premature. Many of the mothers were treated for weeks before being delivered.

MATERNAL DEATH REPORTS

A Toxemic Cases

1 Para 2 Aet. 31 Pregnancy seven and one-half months. B P 170/100, albumin and edema ++, in bed for one month. Twin pregnancy with elective low cervical section under spinal anesthesia and enterostomy on fifth day. Died of intestinal obstruction on sixth day.

4 Eclamptic moribund _____

5 Eclamptic moribund _____

6 Eclamptic, primipara. Aet. 30 Elective classical section under ether. Died of hemolytic streptococcal septicemia on the fourth day.

7 Primipara Aet. 18 Eclamptic. Hirst type under ether. Died of diffuse peritonitis, fifth day.

8 Primipara Aet. 28 Membranes ruptured and started in labor because of toxemia. In labor four hours with several convulsions. Patient had grs 9 of sodium amylal, and scopolamine grs 1/150 s.c. at start of labor. Pulse rapid and weak. B P at onset of labor 140. Albumin L T. Classical section under local anesthesia. Enterostomy forty-eight hours later for obstruction. Recovered from obstruction. Ran a septic course with phlebitis of legs and right arm and pulmonary infarct. Transfused seven weeks postpartum, while seemingly on road to recovery developed infarction of left lung and died four days later. Autopsy showed fibrinous pleurisy with tremendous amount of fluid in pleural cavity. Uterus well healed. Old infarct of lung. Old thrombophlebitis veins of broad ligament and saphenous veins.

9 Primipara Aet. 27 Addison's disease and condition poor before operation. Classical section under ether. Became drowsy twelve hours post-operatively with high temperature. Died in afternoon of second day. Autopsy revealed atrophy of adrenals.

B Cases in Labor

10 Para 2 Aet. 30 Difficult labor with first baby. P I labor twenty-six hours in duration. X-ray showed a very large baby of 10 lbs 11 oz. First operation under ether. Marked distention and gradually rising pulse and temperature. Died on fifth day of peritonitis and septicemia.

11 Primipara with a ten-hour test of hard labor. Classical section under ether. Normal convalescence for three days. Sudden death on the third day of (?) embolus.

12 Primipara Aet. 30 Toxic since six and one-half months pregnant. B P 160/90. Albumin L T. Pulse 110 and impending eclampsia. Thirty-two hours of labor with good labor for eight

THE PREVENTION OF CRIME*

The Gangster In The Making

BY L. VERNON BRIGGS, M.D.

MUCH has been written on the prevention of crime and numerous investigations and surveys have been made in recent years with the object of developing some plan for the reduction of the enormous incidence of crime, especially among juvenile offenders. So far as I know, all this work up to the present time has not resulted in a single dent being made in the crime record, on the other hand there is a continual increase in the numbers of youthful gangsters, with their hold-ups, assaults and murders.

The commissions for the study and prevention of crime which have been appointed by the different branches of our government have usually been composed of people most of whom, having no real experience with the criminal, have had to depend upon evidence presented to them by criminologists, volunteer enthusiasts, one-sided specialists or people with a hobby. This hearsay evidence has then been sifted and a plan formulated for the report, which has usually been pigeon holed and in any case has been of little practical value.

Let us look at this great question in a practical way. Let us discard assumptions, theories and plans for reforming the already hardened criminal and strike at the source from which gangsters and other young criminals develop. It was not until we began to attack the sources of insanity as Dr. Douglas A. Thom has so ably demonstrated in his habit clinics that any scientific progress was made toward its prevention. Any board of health in a community where there is an epidemic does not merely treat the victims of that epidemic and feel satisfied that it is doing all that is possible to protect the community, but it strikes at the source of the outbreak—bad water, impure milk or whatever else.

In the prevention of crime we have never struck at the source in a practical way. Among the hundreds of criminals whom I have examined a very appreciable percentage, old as well as young but especially the young offender of today, began their criminal careers between the ages of ten and twenty, and recently some are beginning at an even earlier age. Many of these young criminals have been well brought up to the time of their school life and they often do well at school, many graduate from the grammar school and some few have spent two or more years in high school. There is no

question of mental deficiency in the majority of these cases. Hundreds of our boys who graduate from grammar school or leave high school before graduation walk out into the world with no prospect of employment and not a soul reaches out a hand to help them. Some of course find employment through the influence of their families or friends or fill vacant positions awaiting such material, but there is a large group who have no friends to give them jobs and whose families, on account of economic or domestic conditions are unable to help them. Discouraged after efforts to obtain legitimate employment and usually being in unfavorable environment they either join the corner gang or get suggestions from moving pictures, radio stories or detailed front-page newspaper accounts dealing with the adventure of crime. Among the boys they meet on the corner are graduates of our so-called "reform schools" (which have proved to be schools for education in crime) who talk over with them the crimes they see depicted in the movies, hear described over the radio or read of in the newspapers, or tell their own experiences as to the easy way of getting money and of the thrills they get from wild rides in stolen automobiles and daring hold-ups. The young gangster as a rule has little interest in safe blowing or house breaking. What most of these boys want is the thrill of adventure, even if there is no financial gain. If caught early in their careers they are usually sent to the "reform schools." A large number among the young criminals whom I have examined were sent at twelve, fourteen or sixteen years of age to one of these schools of crime for appropriating an automobile for a "joy ride" or some other minor delinquency, they have told me that there they met other boys more experienced in crime than themselves, who told them exciting stories about the more serious crimes of hold-up or burglary with whom they planned a life of crime together after their discharge. Some boys make good their escape from the reform schools in order that they may immediately begin their hold-ups and depredations, and so little effort is made to return them to the schools that they are generally free to pursue their avocations until they are finally convicted for more serious crimes.

Another link in the development of the young gangster is the want of classification of these boys after their first arrest. Thrown together with hardened criminals in jails and prisons they listen to the stories of their companions with admiration and a desire of emulation born

Condensed from a paper read at the Fall Meeting of the New England Society of Psychiatry at Butler Hospital, Providence, R. I. October 8, 1932.

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e.g., Lachenstein¹⁷ 94 per cent, Solomons¹⁸ 103 per cent, Williams¹⁹ 133 per cent and others, that cesarean section should be reserved for those cases where disproportion would indicate the operation regardless of the presence or absence of eclampsia, or for those cases not improving under conservative treatment.

The mortality in the cases of toxemia (108 per cent) is high. The frequent presence of factors such as large babies, previous repairs and so forth made section a necessity in many instances. The fact that warning signals of impending eclampsia were the reason in many cases, and the fact that these symptoms occurred in spite of intensive hospital treatment make us hope that the newer method of Arnold and Fay²⁰ of fluid restriction, concentrated glucose intravenously and so forth will be of greater value than our medical treatment in the past. Moreover, the more frequent use of local anesthesia, in view of the work of Stander²¹, is suggested wherever surgery is necessary in toxemics.

The only death in the placenta previa series occurred from shock due to hemorrhage. The routine presence of a transfusion team ready to operate, in addition to the cesarean team as suggested by Bill²¹ seems logical. Moreover, as postoperative hemorrhage occurred in cases other than those of previa it is logical to have a donor present in every section. This precaution might have prevented some fatalities in the series.

Because of the greater risk when patients have been in labor a long while, it is good obstetrics for the general practitioner to have a consultation with an obstetrician before labor in any case where successful delivery from below is doubtful. The consultant should make a careful obstetrical examination including the use and appreciation of the aid afforded by good x-rays (lateral and anteroposterior) so that, if possible, section may be done as an elective measure, or so that he may with equanimity allow the case to go into labor to full dilatation.

So, too, the poor results of both classical and cervical operations in cases neglected or in labor for prolonged periods with ruptured membranes and vaginal examinations indicate the performance of hysterectomy when the uterus is infected, and hysterectomy, or some form of exclusion, such as exteriorization of the uterus, when probably or potentially infected. The results in this class of case have not been good.

This is not in agreement with other series that have been reported.

The writer wishes to express his appreciation to the Rev. Father Thomas J. Brennan and Miss Josephine Thurlow, R.N., superintendents of St. Elizabeth's Hospital and the Cambridge Hospital respectively, to Charles Kickham, M.D., and James Lincoln Huntington, M.D., the chiefs of obstetrics, to William Haley, M.D., chief of the staff of St. Elizabeth's Hospital, to Sister Elizabeth Marie and Miss Estelle Ord, librarians, and to the members of the staffs whose cases made possible this study.

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solutely prohibit children in the formative period of their lives from attending any moving pictures which painted violations of law in attractive colors" He said, "One spring afternoon recently when I passed a so-called 'movie palace' whose front was plastered over with lurid posters advertising the films to be seen there was a film whose hero was a dashing 'two-gun man', one of those thugs that exist only in the movies, rob only the rich and never the poor, are good to their wives and mothers and give dollars to the blind man on the corner Over a space of nearly a block, waiting for the doors to be opened, was a line of several hundred little children, tightly clutching the coins which had been given them by hard-working fathers and mothers. Twenty-five years ago these same children would have spent the afternoon out-of-doors breathing God's pure air

The movies have an infinite capacity for good Some of the great historical films have been masterpieces, but it appears that for every one of these there are ten put out either dealing with sex irregularities or painting crime in rose-colored hues"

The following list of plays is quoted from a single issue of a Boston paper some time ago, today you will find them similar and even more startling "Her Man," "Love in the Rough," "Doorway to Hell," "Sm Takes a Holiday," "Lady of Scandal," "The Big Pond," "Derelect" "Feet First," "Mm and Bill," "A Lady Surrenders" and "Scarlet Pages", and this after a new code of movie conduct had been ratified by the Directors of the Motion Picture Producers and Distributors of America Inc! "The Code," an announcement said "will determine the character of motion pictures exhibited in 22 000 theaters in this country Among other provisions scenes of passion shall not be introduced when not essential to the plot (1) The sanctity of the institution of marriage and the home shall be upheld. Crimes against law shall never be presented in such a way as to show sympathy with the crime as against law or justice Acts of murder or brutality shall only be presented in such a way as will not inspire imitation, methods of crime shall not be presented in explicit detail on the screen, revenge in modern times (1) shall not be justified as a motive" Anyone who attends moving picture shows will be surprised at the interpretation of the code shown in the films put on by this body of directors

The *Boston Record* of May 1, 1933, printed a dispatch from Hollywood describing a new film "Miriam plays the prim welfare woman's daughter, who rebels against repressions and steps out to taste life Frederick will be seen as the man-about-town who helps her dig out what a young girl shouldn't know, Ralph plays a crook again, this time a petty larcener, who invites much sympathy and dies in the end."

A radio in one of the daily papers of "The

Townsend Murder Mystery," reads "Butler shot as he answers telephone—New tragedy of Townsend home claims Quintus Jones as victim—Detectives, rushing to the spot, find Jones lying by telephone in a pool of blood," etc

An interesting page appeared in *Life* February 22, 1930 A hold-up man is pictured as having just shot and killed his victim Above this pair is an advertisement of various popular makes of pistols for sale by a mail-order house in Denver, Colorado

If the radio, and especially the moving pictures are not responsible for the education in crime of children under ten years of age, I should like someone to tell me how some of these youngsters get the information which they use so effectively to carry out crimes requiring a knowledge and skill which it would be impossible for them to have without some suggestion or information I have made inquiries into the cases of a number of very young criminals and have obtained their photographs, for study, I refer briefly to a number of these

F R, aged 12, was indicted in Nashua, N H, in 1928, for murder in the first degree, having killed another child of 9

Two little brothers, aged 5 and 7, confessed to the murder of a three-year-old baby in 1929 After mutilating and killing the child, they buried the body

In East Boston in 1926, three boys of 9 and 10 killed a five-year-old companion and threw his body into a pool of stagnant water after stripping him of his clothing

In September, 1929 two boys, aged 9 and 13, buried alive a companion of 11 When dug up the victim was found to have a bullet hole in his body These boys were tried for manslaughter

In Paintsville, Kentucky, on April 2, 1930, a reform school boy, aged only 6, was convicted of manslaughter for slaying a child of 8, after an altercation over a piece of scrap iron which the two had sought to sell to a junk dealer

In July 1929, D N, aged 8, of Elizabeth, N J, was paroled having slain his brother aged 16, with a rifle, after a quarrel over the rifle

In January, 1932, S W, aged 14, slew a farmer for whom he was working in Norristown, Pennsylvania He said that he shot his employer in order to get an automobile to go and see his mother, who was ill—a typical case of the result of suggestion from some source as to how to gain his end.

On November 2, 1931, P S, aged 7, of Union, N Y, shot and killed his sister because, he said, she teased him and spoiled his spelling book

A few years ago a careful investigation was made in New York City of the space given to crime items in twelve of the leading newspapers The sum of such items for a month in these twelve papers was 4,712, covering 89,862 inches of space The percentages of crime news in relation to the whole varied from 11.87 per

of a natural love of adventure. I once questioned a thirteen-year-old boy whom I saw walking in the yard of one of our jails in company with an extremely tough-looking inmate. He told me he was there for stealing candy and cigarettes and expected to go to court the following day. Of his companion he said, "Gee, he's a great guy! He's been in prison many times. He has been telling me of his robberies. He has killed two men in his getaways. Gee, he's a great man!"

More than a hundred boys between fourteen and sixteen years of age are held in the Charles Street Jail every year and nearly as many in the Middlesex County Jail at East Cambridge, almost all of whom could safely be released while waiting for a hearing, according to Mr. Alfred F. Whitman, Ex-Secretary of the Children's Aid Association.

I wonder why so many young people of today are more interested in crime and criminals than in the prevention of crime? Is it the exploitation of crime through our modern channels which reaches every home in our land and which makes the gangster the hero of many susceptible young minds?

I cannot here take up the question of the lack of institutions or of any special provision for the scientific care and reform of this group. My present subject is prevention, that is attacking the causes of crime at its source and protecting these boys from the temptations of an environment which educates them in crime and gives them the desire for such thrill and inspiration as it provides. We know how ready and even eager the communities and even the legislatures are to punish these young offenders after they are caught and to provide the money to pay for their different arrests, their trials and temporary segregations where they are fed and clothed and often reeducated for further deeds of violence at great expense to the taxpayers. We know of the many associations and societies whose object is the reform of criminals, and the different welfare organizations which contribute to the support of their families but pay little attention to the prevention of delinquencies.

My plan would be for all these organizations or the communities which they represent to get together and form a personnel to be on hand when these boys graduate or leave school prematurely, to take them by the hand and guide them into normal pursuits. Such organizations throughout our states would cost less by many thousands of dollars than we now spend for the care of these individuals in after-life and would prevent an untold loss of life and property from depredations, hold-ups and burglaries, and it would add to the number of useful citizens who can take care of themselves, instead

of forcing us to employ detectives, police and afterwards wardens at great expense, to watch over them for the rest of their lives.

When a boy is obliged to leave school, for whatever cause, a blank questionnaire should be furnished him to fill out which would inform the teacher what plans or desires he may have for the immediate future. If the reply shows that arrangements for him have not already been made, his questionnaire card should be turned over to the members of the follow-up organization, in whose hands the boy should be placed until they are sure that he is protected from dangerous influences and has a proper place in the community.

I agree with Professor Francis B. Sayre that the accepted methods of our day are not materially reducing crime and that prevention should begin with the child in the school. But I believe that the next step is to care for these young people the moment they leave school, by providing them with friends who will extend to them a helping hand, assist them to find employment and prevent their being led into lives of crime. Some plan such as I have suggested for helping the group who are now lost to the community because of neglect after leaving school should certainly be available, in addition to what is being done in the school. One would have to go farther than Professor Sayre's progressive program.

More than this, something effectual should be done to remove the continual suggestions of crime which come to children in nearly all classes of life from their earliest years. I believe that a campaign should be started to educate our censors of moving pictures, radio stories, etc., to the serious dangers of crime pictures and stories, which are probably now the cause of much crime in the State. Many of the young gangsters have told me that when the gangster business was dull and they were not meeting with much success they went to see crime pictures, to be "pepped up" and get inspiration and encouragement and to learn new methods for their work. They don't mind whether the story has a moral and the burglar is caught and punished, that does not interest them. What they want are the details and the mechanism of the crimes. They will tell you what the celebrated "Lone Wolf" told me when I asked him why, with his education and background, he was willing to take up his "profession", as he called it, of crime. He answered that it was because it was so lucrative and safe, he had studied statistics and found that 80 per cent of the criminals never were caught, and that of the remaining 20 per cent only four or five were convicted, he said it was "a dead open and shut gambler's chance."

Attorney General Bushnell some years ago urged the enactment of a law which should "ab-

rest. He left school at 15 and entered a manual training school for evening study, but spent three nights out of every five with girls at moving picture shows. He was one of those boys who enjoy thrills which he began by speeding his automobile around corners on two wheels. He and another boy stole \$700 in Liberty Bonds and \$50 in cash from a safe in his father's room and he also took his father's automatic revolver. He said, "Every movie I saw which showed what happened in the West always had a revolver in it. With the revolver and the money he went to a hotel in Springfield, flashed his revolver about and behaved generally like a bad man from a Western movie. Followed to his room and questioned by a policeman in plain clothes he asked the latter to telephone his father and on his return he pointed the revolver at him and told him to get out and as he refused to do so the boy shot him in the breast. He then telegraphed his father that he had 'shot a bull' and boarded a train for Boston. On the train he continued bragging and displaying his revolver and telling the other passengers that he had 'shot a bull.' A policeman finally boarded the train to arrest him and the boy fired several shots at him from which the officer subsequently died.

Another young murderer whom I examined was C. T. aged 19 of Italian parentage the fourth of nine children. His father was cruel to him and when

he married a second wife all the children of the first wife left home. The father said that he played truant while he was in the sixth grade in school, but there is no record of this in the school, the teachers reporting that he was "a well-conducted boy, who never gave any trouble, noted for his very polite manners and good nature." Like all of his brothers and sisters he left school as soon as he was of working age but got no employment that gave him a regular wage. The Society for the Prevention of Cruelty to Children and the Associated Charities were both appealed to in his case but he was nevertheless allowed to drift into a criminal career. At 14 he attempted larceny and was committed to Shirley. Later he was again committed to Shirley and afterwards paroled; after this he committed a robbery in Ashburnham and defaulted on bail of \$2,000, and still later he was found guilty of breaking and entering a store in Fitchburg. Finally he committed a murder and was executed before he was 20.

In the hundreds of cases cited in the daily press and many whom I have examined I have found that nearly all of them show the necessity of such work as I have suggested to keep these boys away from evil associates and suggestions on leaving school, and to prevent their drifting into lives of crime.

ATRESIA OF THE CERVIX ASSOCIATED WITH HEMATOMETRA

BY EUGENE E. ALLEN, M.D.*

FOLLOWING is the report of a case of unusual interest which has recently come to my attention, and of which there is little found in the literature relating to the subject.

In the *Medical Journal of Australia*, dated August 6, 1932, I. Graham of New South Wales, describes a case of hematometra and uterine maldevelopment. In his case which is similar to mine, the cervix was found undeveloped and the uterus contained chocolate-colored blood.

History. A white female patient, aged 15 years entered the Massachusetts State Infirmary complaining of pain in the lower abdomen and back, associated with an abdominal mass.

Her past history was essentially negative except for the fact that she had never menstruated.

The family history is irrelevant.

Present Illness. Five months previous to her admission she began to have cramps in the lower abdomen, associated with a sharp pain in the lumbar region. These pains lasted for three days. The pains occurred regularly each month until the time she was admitted. In the last two attacks the pains lasted for one week each time. At no time were there any signs of blood. Four months previous to her admission a mass appeared in the left lower quadrant. Each succeeding month the mass was larger and was associated with more or less continuous lower abdominal pain. Nausea, vomiting and dizziness always accompanied the attacks. She sought advice at another hospital and was examined under ether. The diagnosis at that time was re-

tained menses due to atresia of the vagina. She was referred to our hospital for hysterectomy.

Physical Examination. On physical examination the patient appeared fairly well developed and nourished. She weighed 95½ pounds and was five feet in height. Her usual weight was 104 lbs. Her carriage was erect. The temperature was 99.6°, the pulse 84 and the respirations 22. Mentally she appeared normal. The tongue was moist and protruded in the midline. All the teeth were present and in good condition. The mouth was clean. The tonsils were hypertrophied. There was considerable acne of the face, chest and back. The reflexes were normal. The color of the hair was light brown. The eyes reacted to light and distance, their color was blue. The breasts were normal, virginal in type. The heart and lungs were normal. On abdominal examination the fundus of the uterus was found to be enlarged to within two fingers of the umbilicus and freely movable. The abdomen was dull to percussion. No sounds were heard by the stethoscope. No fetal parts were felt. There was tenderness on palpation and the abdominal recti muscles were tense.

Vaginal Examination. Normal nulliparous genitalia. The introitus admitted the tip of the little finger.

Extremities were negative. Blood pressure was 118/72.

Laboratory findings were negative. Under ether a small Sims speculum was admitted. A very slight leukorrhea was present. On the floor of the vagina and running the length of it was a mound of tissue about 3 mm. in height. The vaginal canal was about 6 cm. long. There were no vaginal fornices. Instead of a normal cervix with an os there was a small thickened circular area about the size of a quarter. Bimanual examination showed the uterus

Allen, Eugene E.—Senior Physician, Female Hospital, State Infirmary, Tewksbury, Mass. For record and address of author see *This Week's Issue*, page 971.

cent in the *Evening Telegram* to 33.11 per cent in the *Daily News*. The survey was made four years ago and items of this nature have greatly increased since that time.

The court rooms in our cities are also schools for criminals. Youths bent on a criminal life can learn the methods of old and experienced wrong doers in the court room. In notorious cases, especially hold-ups with a lot of thrill in them, you will not only find the court rooms crowded with gangsters in the making, but the corridors adjacent to the court rooms are also filled with persons anxiously awaiting a turn to get in and learn the intricacies of the trade of the safe blower, the artful methods of the hold-up man and the cunning of the murderer who puts his victim "on the spot." One of our Deputy Commissioners of Corrections says, "When I was in Court the other day I learned how to break into a safe, the names of the chemicals, the electrical tools and other articles used by safe-blowers." I again quote District Attorney Bushnell. He says, "I'd like to see the Court, in a rotten case, bar the doors and search everyone in the courtroom, and it would be surprising to see the number of fellows there who have records."

I feel sure, after all these years of experience, that if these evil suggestions could be removed or even partially controlled, and if an organization could be perfected by the State or by the communities therein, to give a friendly hand to these boys at the time they need it—which they virtually never receive today—instead of the unlimited attention paid to them later, it would be only a few years before we should see a lowering of the incidence of crime in Massachusetts. Only by such means, by attacking crime at its source, can real prevention be brought about. As the State now looks after the defective eyes, teeth, etc., of our school children, let it also look after their morals and the future of the comparatively few graduates and those who have to leave before graduation who are without friends or moral guidance at the most critical period of their lives.

The following brief summary of some typical cases of young criminals whom I have personally examined among thousands which have come to my attention will illustrate my subject.

H. J. G., aged 20, whom I examined in prison came of a family well known to the leading social agencies, including the Family Welfare Society, the Little Wanderers Home, The State Minor Wards, the Children's Mission, the Jamaica Plain Emergency Loan, the Lowell Social Service Exchange, the Brookline Court, the American Red Cross, the Children's Aid, the Provident Association and the Women's Educational and Industrial Union. All of these agencies were in touch with the family for several years but I cannot find that any steps were taken to prevent this boy's becoming a criminal. He left school at 14 to go to work, having finished the sixth Grade and started the seventh. He joined a corner gang called the "Dirty Dozen" and spent much time

with his companions loafing on the corners, going to dances and the movies in the evening. He was characterized as the "Baby faced Robber," and was finally electrocuted for first degree murder, having shot and killed a Medford storekeeper during a hold up.

A. F. D., aged 17, S. B. T., 18, and J. R. S., 17 were examined by me following a series of burglaries which ended when their car, loaded with loot, was held up by a policeman whom they shot dead. All were indicted for murder in the first degree and convicted of murder in the second degree. Of these boys, A. F. D. began his thefts at 6 years of age. At 13 he made the acquaintance of a boy of his own age, H., who had escaped from the Lyman School, and they made a break which resulted in their both being put on probation. In spite of this, he is reported to have graduated from grammar school when 15 years of age with a "good record no trancies and no tardiness." In the same year he was sentenced to five years at the Shirley Industrial School, but was again put on probation.

The second of this group S. B. T., finished the sixth grade at the D. School when 16 years of age, his intelligence quotient is given as 83. Neighborhood influences were bad, as in all these cases. The head master of the school, nevertheless "thinks he was a good boy up to the time he left." He really felt that "the boy was waiting for someone to hand him a job" which of course nobody did. He managed to get a radio, a crystal set. In fact these three boys were so much interested in radios that they never missed an opportunity to steal a radio from any house that they robbed. S. B. T. was a member of a gang of which his two companions and H. were also members.

J. R. S. the third of the group left school at the age of 15 after completing the sixth grade. His family had been helped by the Elliot Church the Associated Charities, the Overseers of the Poor, etc. He told me that he had little amusement in his life excepting from the movies which he had begun to attend at the age of 11. He said "I liked series of pictures, that I followed up. Saw Lon Chaney Hundoz Bum (?) Phantom of the Opera etc. His reading for the last six years had been confined to detective stories, 'especially Flynn's'."

I examined S. Z., aged 17 following his arraignment for the murder of a fourteen-year-old girl he had committed many other serious delinquencies. He said that he began stealing candy and breaking into small shops at the age of 10. He was arrested several times for truancy and was sent to the Hampden County Training School but ran away from there. At 14 he was arrested for breaking and entering and sentenced for two years to the Shirley School. In spite of his having previously run away three times from reform schools and staying out once for as long as four months before he was caught, and in spite of his previous record at the Hampden County Training School and of his staging a movie wreck which was discovered only in time to prevent disaster on the Boston and Maine Railroad he was considered by the authorities of the school for discharge into the community with the belief that he would do well. Up to the time of his residence in these "reform" schools he had been guilty only of truancy and petty delinquencies when he escaped he continued his delinquency and spent most of his time with a gang of boys and girls. His reading had been confined to accounts of murders and other crimes in the newspapers.

I examined F. W. P. aged 19 after he had been confined for more than a year in jail awaiting trial for shooting a policeman in an effort to avoid arrest.

CASE J R. Operated August 4, 1928, at the Boston City Hospital.

The incision is made on the lateral aspect of the arm over the middle third and over the insertion of the deltoid. The long head is dissected out. A Kelly forceps is then pushed beneath the deltoid and pulled down toward the insertion. The ruptured tendon of the long head was then pulled under the insertion of the deltoid and the tendon then sutured to itself and to the insertion of the deltoid.

The patient returned to work after six weeks.

CASE J D. aged 49 yard worker for a paper company. Seen March 9 1931. He was lifting a log of 50 to 75 pounds when the right arm gave way. This was in January. He kept on at heavy work, then at light work until recently but had to give it up.

He was operated on at the Faulkner Hospital, March 11, 1931. Typical operation. The torn tendon was carried through under the deltoid inser-

tion. He made a prompt recovery, and the stitches were out after nine days. He was discharged April 2, 1931.

This patient, a small man of phenomenal muscular development, went at hard work promptly after three weeks, and the muscle hitch stretched a bit.

A second operation was done October 2, 1931, at the Faulkner Hospital. An incision was made through the scar. The hitch in the deltoid insertion had held, but probably had not been made short enough. At all events the outer head was slack. Fascia was used to take a reef in the muscle and tendon and he was kept in the hospital thirty three days to make sure.

This time it held with a really restored muscle.

In no other case has there been slackening, or any loss in the effectiveness of the mechanical hitch in operations under this technique in a not inconsiderable total of cases.

ABSTRACTS OF DR. CAMPBELL'S LECTURE

Charging that psychiatry has devoted too much of its energy in recent years to the classification of psychiatric cases into neat and arbitrary types, Dr Charles Macfie Campbell, Professor of Psychiatry, Harvard University, in his second Salmon Memorial Lecture delivered April 20, 1934 at the New York Academy of Medicine called for an 'arbitrary respite from this activity' and urged the medical profession to concentrate 'on the dynamic analysis of psychiatric problems and cases'.

'One of the most important advances in psychiatry,' said Dr Campbell, 'has been the fuller realization of the importance of the personal factor in the psychiatric case'.

The interpretation of the psychosis as a maladaptation and as a miscarriage of an attempt by the patient at a solution of his problem, instead of as a meaningless disturbance has according to Dr Campbell, advanced psychiatry both in its interpretation of the material it deals with and in its curative effects.

Dr Campbell urged that the psychosis the specific form of the patient's psychologic difficulty can be, and should be studied as one section of the individual's life history, from which much understanding, both as to the nature of the individual and of his case may be derived.

In studying the psychosis it is much more important that the component elements be identified and understood than that they should be identified under conventional names.

The concern with classification and labelling of cases Dr Campbell believes interferes with the appreciation of the dynamic nature of psychiatric problems.

A convenient classification of psychiatric cases can be achieved under the headings of organic, toxic and symptomatic psychosis. In some of these

divisions the impersonal factors play a prominent part in bringing on the psychosis. A certain number of patients too can be classified according to specific types of vulnerability and their 'breakdown' can be explained in terms of their weaknesses and the particular strains to which they were subjected.

There is left, however even after such classifications, a large residue of rather serious cases which accumulate in the psychiatric hospitals and which constitute a serious challenge to the psychiatrist. In this residual mass are to be found the dementia praecox or the schizophrenic cases.

Dr Campbell reviewed the question as to whether the dementia praecox group represents a type of psychiatric case in which an impersonal disease process is operating.

He expressed the opinion that the intensive study of cases belonging to this group has not enabled one decisively to demonstrate the presence of an impersonal disease process revealed either by clinical symptoms or by histopathology.

FOUR INSTRUCTIVE PAMPHLETS

The Metropolitan Life Insurance Company has for distribution four pamphlets dealing with the family food supply, suggestions for good food at low cost, the baby, and diphtheria prevention.

A physician may use these brochures to advantage when it is desirable to provide his patients with concise information in these subjects. The importance of consulting a physician whenever there is evidence of departure from the normal is made clear.

If every pregnant woman would study the pamphlet on The Baby or some equally good publication, both the mother and her child would profit thereby.

fluctuant and enlarged to about the size of a four months' pregnancy. No masses were felt in either vault. Ovaries and tubes were not palpable. It was felt that something could be done to save this patient for possible childbearing and not subject her to the serious operation of hysterectomy. Consequently she was operated on in an attempt to construct a patent uterovaginal opening. An incision was made in the center of the thickened circular area described. Goodall & Hanks' dilators were used to enlarge the opening. A thick chocolate-colored blood oozed out, estimated at about 1000 cc. Her convalescence was uneventful. Later examination showed that the opening had closed. She then developed an acute attack of tonsillitis. Following this complication she again experienced what were probably the symptoms of menstruation and it was found that the uterus was again becoming distended.

Again she was taken to the operating room. This time the uterine cavity was entered in the same manner as before and the inner and outer edges of the opening drawn together with catgut sutures. About 500 cc of thick mucilaginous like dark red blood was expressed. A number 24 soft rubber catheter was fastened in situ, being removed the following day. Her convalescence from this operation was rather stormy as the vaginal discharge became somewhat purulent and the temperature rose to 103°, with a white cell count of 22,000. She was

given appropriate treatment, but with the subsidence of this complication the tonsillitis, which she previously had, recurred. She gradually overcame this complication. Vaginal examination again showed the uterovaginal opening to have closed and once more, five weeks following the second operation, she was removed to the operating room and a modified Pozzi operation was done, the incision being stretched to about 1½ inches in diameter. About 30 cc of a foul smelling purulent sanguineous fluid oozed out. Iodoform gauze drain was left in situ for twenty-four hours. Convalescence was fairly good, the temperature going occasionally as high as 102°. Seventeen days after operation she was given potassium permanganate douches and sitz baths. Examination showed a patent os with no discharge or tenderness. The patient felt well and was up and about the ward. Since the last operation, she has had two normal periods while in the hospital, staining seven pads each time. Her weight on discharge was 112½ lbs. She had a tonsillectomy and adenoidectomy done following the third vaginal operation, and now feels perfectly well.

Since her discharge from the hospital, I have had two communications from her, one by letter and one by a visit and she has had two more normal periods, each time experiencing only slight discomfort.

RUPTURED BICEPS TENDON REPAIR

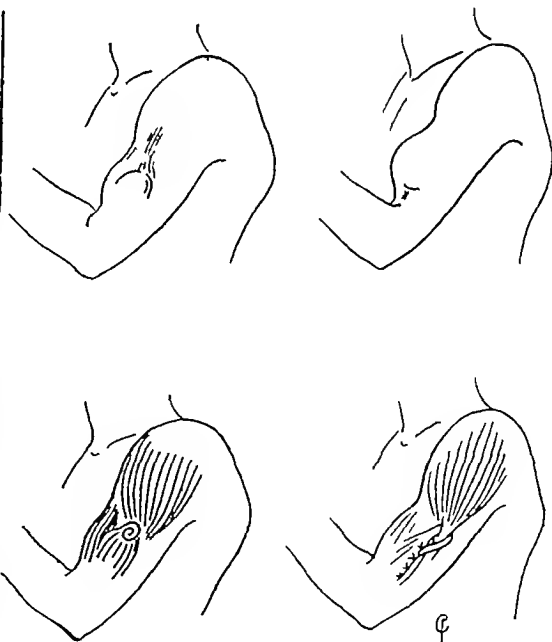
BY FREDERIC JAY COTTON, M.D.,† AND GORDON M. MORRISON, M.D.†

RUPTURE of the biceps tendon is not at all unusual. Nearly always it occurs at or after middle age. Rarely the tendon leading to the radial insertion gives way. This I think always occurs before fifty from major trauma, i.e., lifting. The picture is unmistakable, see figure 1. Repair is by direct tendon suture. I have operated on one case, which did well, but no end-result report is available.

Far commoner is the rupture of the long head, which gives way in a lift not always heavy, in an elderly laborer without previous recognized disability. The rupture is not that of a normal tendon, but of one worn and atrophic as the structures about the shoulder so often are in age*. The picture is typical and constant, see figure 2.

The break may occur at any point above the muscle belly, but commonly in the bicipital groove, often within the shoulder joint. The reaction is slight, often disregarded. The disability is definite in weakness, but often not conspicuous. Save for the ease of complete repair, the operation might often be debatable.

Much type has been wasted in discussing fixations by suture in the groove, or even through the drilled shaft. The matter is really almost ludicrously simple. There is one absolutely solid



RUPTURE OF BICEPS TENDON

FIG 1 Upper left. Typical rupture of the long head.
FIG 2 Upper right. Rupture of the tendon below the muscle belly—a rare accident.
FIG 3 Lower left. Rupture of the long head. Coiling up of the snapped tendon into the muscle.
FIG 4 Lower right. Tendon passed through the deltoid insertion back to the outer muscle belly into the mass of which it is sutured. The appropriate tension on tendon and muscle must be a matter of judgment.

*Codman and Akerson. The pathology associated with rupture of the suprapinnatus tendon. *Ann. Surg.* 93: 348 1931.
Meyer. Spontaneous dislocation and destruction of tendon of long head of biceps brachii. *Arch. Surg.* 17: 493 1928.
†For records and addresses of authors see page 817 issue of April 12 1934.

hitch to use. It is the heavy insertion of the deltoid on the antero-external face of the humeral shaft.

HOUSE OF DELEGATES

MONDAY, MAY 14, 7 30 P.M.

Hotel Carpenter

Speaker, Carleton R Metcalf, Concord

Vice-Speaker, Henry C Sanders, Jr, Claremont.

Order of Business

Subject to Approval of the House

Roll Call

Minutes of last meeting

Appointment of Committees

Reports of Officers

Reports of Standing and Special Committees

New Business

Report of Committee on Nominations (First business of second day)

Election of Officers

New Business

Unfinished Business

STANDING COMMITTEES

Scientific Work

Dennis E Sullivan* Richard W Robinson,
Frederick P Scribner

Public Relations, Public Policy and Legislation

Samuel T Ladd Harry O Chesley, Charles Duncan, the President, the Secretary-Treasurer

Publication

Dennis E Sullivan*, Benjamin P Burpee, Lawrence R Hazzard

Tuberculosis

Robert B Kerr, Robert W Deming, Arthur L Wallace

Mental and Social Hygiene

Charles A Weaver, Benjamin W Baker, Charles H Dolloff

Control of Cancer

George C Wilkins, Howard N Kingsford,
George F Dwinell

Lay Health Organizations

Robert B Kerr (1934) Eugene B Eastman*
(1935), Carleton R Metcalf (1936) Emery
M Fitch (1937), Ezra A. Jones (1938)

Medical Education and Hospitals

Robert J Graves (1934) John P Bowler
(1935), Deering G Smith (1936)

Advisory Committee on Jurisprudence

Thomas W Luce Rockingham County, Robert
J Graves, Merrimack County, Osmon H
Hubbard Cheshire County, Fred E Clow,
Carroll County, Arthur T Downing, Graf-

*Deceased.

ton County, Henry C Sanders, Jr, Sullivan County, David W Parker, Hillsborough County, Clifton S Abbott, Belknap County, Louis W Flanders, Strafford County, William H Leith*, Coos County, Dennis E Sullivan*, Concord, Chairman

Amendments to Constitution and By-Laws

Henry O Smith, Fred E Clow, Thomas W Luce

New England Medical Council

Robert J Graves, President, Dennis E Sullivan*, Secretary-Treasurer, Frederic P Lord (1934), Thomas W Luce (1935), David W Parker (1936)

*Deceased.

ANNOUNCEMENTS

All meetings will begin promptly Standard Time

Every member is requested to register and receive a badge before entering the General Assembly Hall Please present your membership certificate when registering

During the discussion of papers, the speakers will please announce their names plainly for the benefit of the stenographer and then walk forward to the platform so that the audience and the stenographer may plainly hear what is said

Discussion of papers is open to all members and guests of the Society It is not limited to those named on the program

Ladies of visiting members are cordially invited to visit Manchester during the state meeting and are urged to attend the entertainment on Tuesday evening and the banquet on Wednesday evening

Members of the resident Ladies Committee will be in attendance at headquarters to render such services as may be desired by the visiting ladies

As heretofore the usual exhibition of x-ray apparatus books surgical appliances drugs and foods will be held Application for space should be made to Dr George F Dwinell, Manchester

GENERAL MEETING

TUESDAY, MAY 15, 10 A.M. S T

Call to order by the President, Robert J Graves, Concord

Invocation, Rev Erville B Maynard, Rector Grace Episcopal Church, Manchester

Address of Welcome, The Mayor, Damase Caron, MD

Report of Committee on Arrangements Howard A Streeter, Chairman Manchester

Prolapse of Uterus During Pregnancy Donald E Higgins, Epping

NEW HAMPSHIRE MEDICAL SOCIETY

THE ONE HUNDRED AND FORTY-THIRD ANNUAL MEETING

Hotel Carpenter, Manchester, N. H.

Tuesday and Wednesday, May 15-16, 1934

ALL meetings will be called to order promptly at the stated hour—Standard Time

The first meeting of the House of Delegates will be held Monday evening, May 14, at 7 30 o'clock, Hotel Carpenter, and subsequent meetings will be in the same place

The Scientific Sessions will open promptly at 10 00 o'clock A.M., Tuesday, with General Meetings forenoon and afternoon, Tuesday and Wednesday

Wednesday evening, May 16, Banquet 6 30 o'clock, Hotel Carpenter Tickets, \$1 50 each

OFFICERS FOR 1933-1934

President

Robert J. Graves, Concord

Vice-President

Frederic P. Lord, Hanover

Secretary-Treasurer

Dennis E. Sullivan*, Concord

Carleton R. Metcalf, pro tem, Concord

*Deceased

Councillors

	Term Expires
Arthur A. Piatte, Cheshire County	1934
Emery M. Fitch, Sullivan County	1934
Henry H. Amsden, Merrimack County	1935
Clarence O. Coburn, Hillsborough Co	1935
Abram W. Mitchell, Rockingham Co	1936
John A. Hunter, Strafford County	1936
Richard E. Wilder, Coos County	1937
Charles E. Smith, Carroll County	1937
Clifton S. Abbott, Belknap County	1938
Arthur T. Downing, Grafton County	1938

Trustees

Thomas W. Luce, Portsmouth	1934
Alpha H. Harriman, Laconia	1935
Henry O. Smith, Hudson	1936

HOUSE OF DELEGATES

The President, ex-officio
The Vice-President, ex-officio
The Secretary-Treasurer, ex-officio

Rockingham County

Arthur M. Fernald, Hampton
Eugene A. Vickery, Portsmouth
Cleon W. Colby, Exeter

Merrimack County

Charles H. Parsons, Concord
Clarence E. Butterfield, Concord
James B. Woodman, Franklin

Cheshire County

Osmon H. Hubbard, Keene
Arthur W. Hopkins, West Swanzey

Grafton County

Kenneth Churchill, Lebanon
Elmer M. Miller, Woodsville

Sullivan County

John H. Munro, Sunapee
Henry C. Sanders, Jr., Claremont

Hillsborough County

Joseph E. Larochelle, Manchester
Roland J. Joyce, Nashua
Byron D. Pease, Greenville
Deering G. Smith, Nashua
George C. Wilkins, Manchester

Belknap County

Richard W. Robinson, Laconia
John R. Perley, Laconia

Carroll County

William J. P. Dye, Wolfeboro
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George C. Rublee, Rochester
Harry O. Chesley, Dover

Coos County

William H. Leith*, Lancaster
Joseph J. Cobb, Berlin

*Deceased

CASE RECORDS
of the
MASSACHUSETTS GENERAL
HOSPITAL

ANTE MORTEM AND POST MORTEM RECORDS AS USED
IN WEEKLY CLINICAL PATHOLOGIC EXERCISES

EDITED BY RICHARD C CABOT, M.D.
F M PAINTER, A.B., ASSISTANT EDITOR

CASE 20181

PRESENTATION OF CASE

A sixty-seven year old American widow entered the Massachusetts Eye and Ear Infirmary for treatment of a cataract in the right eye

Eighteen years before admission while in San Francisco she was found to have sugar in her urine and a blood pressure of 190 Since that time she had been on a slightly restricted diet She tested her urine about once a week and found the reaction was usually green, rarely blue, and not infrequently red Twenty-one months before admission she was awakened one night with severe vertigo She got up for a short while but returned to bed on her hands and knees, still very dizzy The next day she could not get up because of these symptoms Her physician gave her several injections of insulin Her blood pressure at that time was 260 She was in bed for about three weeks during that episode, but had no further recurrence A few months after this attack an ulcer appeared on her right great toe One year before admission she had a cataract removed from her left eye

Family history Her mother died of pneumonia, her father of heart disease at the age of seventy-two There was no history of tuberculosis, cancer or diabetes

Marital history She was married twenty years before entry Her husband died three years later from ulcers of the stomach She had never been pregnant.

At the Eye and Ear Infirmary a cataract was removed from her right eye She did well until the fourth day after operation, when she began to vomit, complain of thirst, and become very restless A medical consultant found that she was dehydrated, had an acetone breath and appeared on the verge of coma Her urine showed a brown test for sugar Two preceding tests had been negative She was given a clysis and put on insulin by test On the fifth postoperative day she complained of some pain in her left chest Her temperature rose to 100.4° and on the following day râles were found at the left base Her blood pressure was 220/110 on admission to the Infirmary

On the sixth day she was transferred to the Massachusetts General Hospital

Physical examination showed a well developed and nourished woman lying in bed, moderately orthopneic The skin was dry There was an eye shield over the right eye The left eye showed the result of an old cataract operation The mouth and tongue were dry The thoracic expansion was limited because of inspiratory pain over the precordium and the left axilla Over the lower half of the left chest and in the axilla there was a fairly definite coarse friction rub There were also many coarse râles There was no dullness or change in whispered and spoken voice The abdomen was moderately distended and tympanitic The liver was felt two fingerbreadths down The heart was not enlarged to percussion. The sounds were weak and regular No murmurs were heard The blood pressure was 140/90

The temperature was 103°, the pulse 118, the respiratory rate 32

Examination of the urine showed a large trace of albumin, a green test for sugar, and no acetone Examination of the blood showed a red cell count of 5,800,000 with a hemoglobin of 70 per cent and a white cell count of 24,900, with 88 per cent polymorphonuclears The fasting blood sugar was 133 milligrams, the carbon dioxide combining power 52.5 volumes per cent

For the first few days her general condition improved slightly and the temperature went down to 101° She was uncoöperative however and required large amounts of sedatives On the fourth day in the Massachusetts General Hospital her condition became definitely worse She was mentally confused, screamed, moaned, groaned, twisted, and tried to get out of bed almost constantly She fell out of bed on one occasion without apparent damage There were moist râles up to the midscapular region on both sides, more marked on the left The urine tests were blue for the most part, with an occasional green test On the fifth day she was observed to have complete left hemiplegia She was conscious but was unable to speak. On the sixth day her pulse and respirations were considerably elevated She became comatose and died on the following day, eleven days after operation

DIFFERENTIAL DIAGNOSIS

DR DWIGHT L SISCOE This seems to me a very complicated and very difficult situation. I approach it with a little more temerity perhaps because of the difficulties of pathologist and clinicians in the last case

Here is a sixty-seven year old widow who we are told had hypertension and diabetes of eighteen years' duration, both of which statements we have to accept at their face value She came to the Eye and Ear Infirmary for a cataract operation It was done and nothing happened until four days later, when she developed pain in the left chest and had some difficulty with

Discussion opened by Donald W Leonard, Physician Phillips Exeter Academy, Exeter

Original motion pictures of an operation performed for this condition

John F Holmes, Manchester, Abram W Mitchell, Epping

Report of a Case of Phenobarbital Poisoning
Bernard P Haubrich, Claremont

Discussion opened by Henry C Sanders, Jr, Claremont, Charles F Keeley, Claremont

Bone Tumors with Report of Two Cases of Benign Giant Cell Tumor and Their Treatment
Herbert L Taylor, Portsmouth

Discussion opened by Ezra A Jones, Manchester, Samuel T Ladd, Portsmouth

TUESDAY, MAY 15, 2 P M S T

Presentation of 50-year Membership Gold Medal to Leonard Jarvis, Claremont, George E Leete, Concord

The President's Address, Robert J Graves, Concord

SYMPOSIUM ON PULMONARY TUBERCULOSIS

Medical Aspect—Robert Deming, Glencliff Sanatorium, S A Petroff, Saranac Lake, New York.

Surgical Aspect—Richard Overholt, Lahey Clinic, Boston, Mass

Roentgenological Aspect—Adelbert S Merrill, Manchester

Open discussion

TUESDAY EVENING, MAY 15, 8 00 P M S T

SOCIAL EVENING

Details will be announced at Morning Session

WEDNESDAY, MAY 16, 10 00 A M S T

Reception of Visiting Delegates

Friedman's Modification of the Aschheim-Zondek Test for Pregnancy Joseph N Friborg, Manchester

Discussion opened by Benjamin P Burpee, Manchester, Lyall A Middleton, Plymouth

Pernicious Anemia William P Murphy, Boston, Mass

Discussion opened by Joseph D Shields, Concord, Clarence O Coburn, Manchester

Address, Dean Lewis, Baltimore, Maryland, President, American Medical Association

WEDNESDAY, MAY 16, 2 00 P M S T

Introduction of new President

What is Wrong with the Patient Who Feels Tired, Weak and Toxic? Walter C Alvarez, Mayo Clinic, Rochester, Minnesota.

Discussion opened by John P Bowler, Hanover, Daniel C Norton, Manchester

Diagnosis and Treatment of Breast Cancer
Frank E Adair, Memorial Hospital, New York City

Discussion opened by George C Wilkins, Manchester, John F Gile, Hanover

Report of House of Delegates

Report of Trustees

Installation of Officers

WEDNESDAY EVENING, MAY 16, 6 30 P M S T

THE BANQUET

James J Powers, Manchester, Anniversary Chairman

Guest speakers of prominence will be announced later

COMMITTEE ON ARRANGEMENTS

General Chairman—Howard A Streeter

SUB COMMITTEES

Location—Alexandre Barbeau

Program—Daniel J Sullivan.

Reception—George V Fiske

Banquet and Entertainment—W A Bartlett.

Exhibition—George F Dwinell

Finance—Elmer J Brown

Publicity—Muriay H Towle

Hospital—Damase Caron

List of Commercial Exhibitors at the time of going to press

Elmer N Blackwell, Portland, Maine

Boss and Seiffert Co, Providence, R I

The Chelmsford Ginger Ale Co, Inc, Chelmsford, Mass

Crossett Shoe Co, Augusta, Maine

Davies, Rose & Co, Ltd, Boston, Mass

George C Frye Co, Portland, Maine

General Electric X-ray Corporation, Boston, Mass

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Surgeons' and Physicians' Supply Co, Boston, Mass

Talby-Nason Company, Boston, Mass

thing, perhaps uremia, perhaps septicemia. I find it very difficult to know which to say. Those symptoms were followed by falling out of bed, and the morning after that by complete hemiplegia. One wonders if she injured her head and skull in falling out of bed. That might have caused a cerebral hemorrhage or have ruptured a vessel or an aneurysm that might have been there from an old luetic lesion. I do not know.

The urine test was still blue and the diabetes was definitely controlled, so that I think we have no diabetic problem here. I feel that although this woman died in coma, it was not diabetic coma, or in my opinion uremic coma. We are not told the non-protein nitrogen figure. On the whole I feel that her comatose condition at the time of death, with left hemiplegia, was associated with cerebral hemorrhage, possibly preceded by a thrombus or an embolus which may have come from a coronary infarct with thrombosis.

The other diagnoses are of course diabetes, which I accept at its face value. She had a cataract, and hypertension of at least eighteen years' duration. It might have been essential in type. Coming on at forty-eight years of age with the diabetes and obviously arteriosclerosis, I think it was more probably not essential in type.

I cannot escape the feeling that this woman had a definite infection, possibly streptococcus septicemia, perhaps only an infection following a coronary or pulmonary infarct.

DR TRACY B MALLORY: Have you anything to add, Dr Brailey?

DR ALLEN G BRAILEY: I saw her during one day in the Eye and Ear Infirmary. It was perfectly evident that she was mildly psychoneurotic. In regard to the cerebral symptoms she had always been an extremely difficult patient. When she was there four years earlier she rushed about the ward and was extremely temperamental. The following morning she had a clysis, fluids and orange juice, and was straightened out. The following day she had pleurisy in her left axilla, not very severe, a few râles, a little fever, and a fall in blood pressure. As I remember, her blood pressure was not over 200 and she had a drop to 150, and I am afraid I passed it off as a drop in blood pressure due to rest and sedatives. I thought she had infarct of the lung or pneumonia when I sent her to the Massachusetts General Hospital.

CLINICAL DIAGNOSES

Cerebral hemorrhage from arteriosclerosis
Hypertension
Diabetes

ANATOMIC DIAGNOSES

Thrombosis of the right circumflex coronary artery
Cardiac infarction with perforation of aneurysm, left ventricle
Hemopericardium
Cardiac hypertrophy

Occlusion of right middle cerebral artery (embolism? thrombosis?)
Cerebral infarct, recent
Cerebellar infarct, old
Hydrothorax, bilateral
Pulmonary fibrosis, right, middle
Chronic pleuropericarditis, right middle lobe
Arteriosclerosis marked coronary, slight aortic and renal, cerebral
Perihepatitis
Pernisplenitis
Cyst of parathyroid
Obesity

PATHOLOGIC DISCUSSION

DR MALLORY: The autopsy showed a very large infarct of the heart which was due to closure of the right coronary rather than the left. In the central portion of the infarct was a definite aneurysmal bulge, and evidently as the final terminal event this cardiac aneurysm had ruptured, she had 300 cubic centimeters of blood in her pericardial cavity. Overlying the infarct in the heart was a thrombus and presumably from this a small plug had broken off and filled the middle cerebral artery, so there was a large area of softening of the brain.

It is rather difficult to guess at time factors. She must have had the infarct and the aneurysm for a considerable length of time, obviously long before the operation for cataract, and I should imagine that the rupture of the heart was terminal, probably subsequent even to the cerebral embolus. I can hardly imagine she could live very long with that amount of blood in the pericardium.

DR SISCOE: Did you find any evidence of lues in the aorta?

DR MALLORY: No. There was nothing definite there.

DR CHARLES S KUBIK: There was also an infarct of the cerebellum, which probably accounts for the vertigo a year and a half or so before her death.

CASE 20182

PRESENTATION OF CASE

This is the case of a forty-four year old Negro steward. Seven years before admission he was refused a life insurance policy because of hypertension. About this time he began to have very severe headaches, usually in the morning. Five years before entry he first noticed dyspnea on exertion and felt generally run down. His appetite remained good and he lost no weight. Two years before admission the dyspnea increased considerably and he was forced to use two or three pillows at night. Occasionally he was awakened at night by asthmatic attacks which lasted fifteen to thirty minutes. He noted that his feet were frequently swollen. He attributed this to his work, which kept him on his feet. A year before entry he was obliged to give up his work because of weakness and dyspnea, and at this time he noticed feeling

sugar in the urine. She was transferred to the Massachusetts General Hospital, where temperature developed and later she died with symptoms which suggest a cerebral accident of some sort.

Of course the interesting thing to me was that twenty-one months before admission she had an attack of vertigo, apparently a very severe one, obliging her to go back to bed on her hands and knees and necessitating staying in bed for three weeks. The most logical assumption would be vascular arteriosclerosis associated with hypertension. I think she probably had more or less arteriosclerosis, because a diabetic of eighteen years' standing would be likely to have arteriosclerosis. Lues must be considered as a cause of the vertigo. The fact that she had diabetes makes us wonder if she had a hypoglycemic reaction. She had not taken insulin before. I have never seen hyperglycemia per se cause vertigo. I think the fact that the doctor gave her insulin following this attack does not necessarily mean that hyperglycemia caused the vertigo. Of course alcohol or nicotine causes vertigo, although we have had no information about either of these. Her blood pressure was said to be 260. I believe we are perfectly justified in assuming that this vertigo is vascular and hypertensive in type.

When she was taken to the Eye and Ear Infirmary for operation on the cataract we have no statement about her cardiorenal vascular system other than that she had a blood pressure of 220/110. I think the cataract was not connected in any way with the vascular system, because she went along very comfortably until the fourth day. I am assuming it to be a senile cataract. It may possibly have been a diabetic one.

On the fourth day she began to vomit and complain of thirst and became very restless. In the presence of a statement of diabetes, vomiting, thirst, and later dehydration and acetone breath, of course diabetic acidosis would be the first consideration. On the other hand there are other possibilities in that syndrome. Those symptoms may be related to intracranial pressure of some sort, or possibly to an infection. The onset of infection, especially septicemia, might cause such a syndrome. Perhaps dehydration alone would do it. On the whole I am inclined to interpret this as due to diabetic acidosis, although we have no carbon dioxide figures at that time.

Then we come to what was to me the chief stumbling block in this case, pain in the left chest. We are not told about the character of the onset of this pain. I do not know how persistent it was. One immediately thinks of all of the things that might cause pain in the chest and of course pleurisy and pneumonia are outstanding for this. Pulmonary or coronary

infarction may cause pain in the chest, but it seems to me that a friction rub in the left chest of the type described is less likely to be due to a coronary accident than to pulmonary infarct. We are told later that the temperature was 103°, the pulse 116, and the respirations 32. I interpret those figures as being too high for ordinary pleurisy. We are also told that she did not have dullness, or change in the breath sounds, or evidence of pneumonia.

The blood pressure at the Eye and Ear Infirmary was 220/110. We are now told that after the pain had been present for two or three days the blood pressure was 140/90 and the heart sounds were very weak but regular. Of course this leads us to a point much more favorable to coronary thrombosis than to pulmonary infarct. I really do not know. I am inclined to feel on the whole that it is coronary infarct rather than pulmonary infarct.

This rub in the left chest was described as a very coarse rub. How persistent was it?

DR ALFRED L. DUNCOMBE: It was there all that evening. The following morning it was gone.

DR. SISCOE: At this point the urine showed a very large trace of albumin, a green test for sugar, and no diacetic acid. The blood sugar was 133 milligrams, the carbon dioxide combining power 52 volumes per cent. On these figures we can rule out diabetic coma and acidosis. She had a red blood cell count of 5,800,000. That may mean polycythemia, but I interpret it as being due to dehydration. The white cell count of 24,900 with 88 per cent polymorphonuclears suggests infection very strongly to me. It is unusually high for coronary thrombosis. It would be more compatible with pulmonary infarction.

This next thing I am very much interested in, the shield over the right eye. I should like to ask if there was any evidence of local infection in the operative field.

DR DUNCOMBE: We did not remove that, but the house officer from the Eye and Ear Infirmary came over and said the eye was in good condition.

DR SISCOE: I am also told a little farther back that she had an ulcer on the left great toe, the statement stops there. In a patient with diabetes an ulcer on the toe is of rather major importance. If it was simple uninfected ulcer on the toe it would not be fair to assume septicemia from a gangrenous toe.

DR DUNCOMBE: It was a very superficial ulcer that healed up.

DR SISCOE: In that case we may disregard it.

She required a large amount of sedatives. "She was mentally confused, screamed, moaned, groaned, twisted, and tried to get out of bed almost constantly." Those things suggest several possibilities, cerebral irritation for one

THE BULLETIN OF THE AMERICAN
SOCIETY FOR THE CONTROL
OF CANCER

THE letter published in another column, from the Chairman of the Massachusetts Committee for the Control of Cancer, calls attention to the *Bulletin* of this Society, and its value and interest to physicians interested in Cancer. The work of the American Society for the Control of Cancer is recognized in this country and abroad as having been one of the most effective agents in the education of the public in regard to this disease. The slow but steady improvement which has occurred in the results of treatment in the past twenty years is, in the opinion of many competent observers due in no small part to the education of the public, which has dispelled many false ideas about Cancer and has made people aware of the importance of early diagnosis and prompt and effective treatment in obtaining a cure of the disease. Much more remains to be done, of course, along these lines, not only with the public, but with the medical profession as well, and the information contained in the *Bulletin* of this Society cannot fail to be of value to every member of the medical profession.

Membership in the Society provides an opportunity to endorse the work of this important organization which should be recognized by all who may be able to contribute the required fee.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors

COCHRANE ROBERT C. B.S., M.D. Harvard University Medical School 1911. F.A.C.S. Surgeon-in-Chief. Second Surgical Service. Boston City Hospital. Member of Associate Staff, New England Deaconess. New England Baptist and several other hospitals. Address 319 Longwood Avenue, Boston, Massachusetts. Associated with him is

NOWAK STANLEY J. G. M.D. Harvard University Medical School 1926. Assistant Director of the Surgical Research Laboratory. Boston City Hospital. Address Boston City Hospital Boston Massachusetts. Their subject is "Acute Thyroiditis With Report of Ten Cases" Page 935

SOWLES HORACE K. A.B. M.D. Harvard University Medical School 1915. F.A.C.S. Chief Surgeon. Lawrence Memorial Hospital. Surgeon to Out-Patients. Massachusetts General Hospital. His subject is "Carcinoma of the Small Intestine" Page 942. Address 279 Clarendon Street Boston Massachusetts

TURNER GEORGE GREY M.B., M.S., F.R.C.S., M.D. University of Durham 1898. F.A.C.S. Professor of Surgery, University of Durham. Senior Honorary Surgeon, Royal Infirmary Major, Royal Army Medical Corps. His subject is "Excision of the Thoracic Oesophagus for Carcinoma with Construction of an Extra-Thoracic Gullet" Page 947. Address The Hawthorns Osborne Road, Newcastle-upon-Tyne, England

O'CONNOR CORNELIUS T. A.B., M.D. Harvard University Medical School 1924. Visiting Gynecologist at St. Elizabeth's Hospital, Brighton, Massachusetts. His subject is "Caesarean Section. A Review of Four Hundred and Thirty-Six Cases" Page 948. Address 476 Commonwealth Avenue Boston Massachusetts

BRIGGS L. VERNON M.D. Medical College of Virginia 1899. President of the New England Society of Psychiatry. Chairman of Committee on Legal Aspects of Psychiatry. His subject is "The Prevention of Crime. The Gangster in the Making" Page 955. Address 64 Beacon Street, Boston, Massachusetts

ALLEN, EUGENE E. M.D. Tufts College Medical School 1929. Senior Physician Female Hospital, State Infirmary Tewksbury, Massachusetts. His subject is "Atresia of the Cervix Associated with Hematometra" Page 959. Address State Infirmary Tewksbury, Massachusetts

COTTON, FREDERIC JAY M.D., and MORRISON, GORDON MACKAY M.D. See page 817 issue of April 12 for records of authors. Their subject is "Ruptured Biceps Tendon Repair" Page 960

MASSACHUSETTS LEGISLATIVE
NOTES

H 755 was submitted to the Legislature on the petition of C. Ruggles Smith Secretary of the Board of Trustees of the University of Massachusetts. The Middlesex College of Medicine and Surgery is affiliated with the University of Massachusetts

Section 2 of this bill H 755 was designed to repeal that provision of the present law which permits the registration of diplomates of the National Board of Medical Examiners by the Massachusetts Board of Registration in Medicine without examination. The bill has been passed by the House of Representatives with Section 2 stricken out.

Unless other action is taken, the recognition of diplomates of the National Board remains with the Board of Registration in Medicine.

This function of state medical examination boards is operative in forty-one states of the Union.

The entire bill was killed in the Senate

The New England Journal of Medicine

SUCCESSOR TO
THE BOSTON MEDICAL AND SURGICAL JOURNAL

Established in 1828

Published by THE MASSACHUSETTS MEDICAL SOCIETY
under the jurisdiction of the

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SUBSCRIPTION TERMS \$6.00 per year in advance postage paid
for the United States Canada \$7.04 per year \$8.62 per year
for all foreign countries belonging to the Postal Union

Material for early publication should be received not later
than noon on Saturday. Orders for reprints must be sent to
the Journal office 8 The Fenway

The Journal does not hold itself responsible for statements
made by any contributor

Communications should be addressed to The New England
Journal of Medicine 8 The Fenway Boston Mass

NERVE-PROCESS VERSUS MIND-PROCESS

THANKS to the closely interwoven researches in neuropsychology of Sir Charles Sherrington and his coworkers at Oxford there has grown up a great body of facts in relation to nerves and their physiological functions, particularly their influence on the musculature of the body. From this point of view the brain is, also, part of "one originally uniform nerve-organ with for its main primeval office the management of those muscles, often still called the muscles of external relation." The mechanism consists of two opposing processes, excitation and inhibition, both cooperating at nodal points in the nerve circuit. As Sherrington expresses it "Their joint operation at any moment settles what will be the conduction pattern, and so the motor outcome, of the signalling going forward in the brain." Such a meagre outline naturally gives little idea

of the perfection of performance the reflex machinery can reach. We know, however, something of the strength, the speed, the direction and the steadiness of motor acts. There is also, except for the simplest reflex, a great flexibility of result. A slight difference in stimulus changes the result to one adapted to the new stimulus. Even more significant, the same stimulus can from occasion to occasion call forth different results, even amounting to actual reversal.

These and other details are carefully summarized in Professor Sherrington's Rede lecture, delivered before the University of Cambridge, England, in December 1933*. When we turn, however, from an actual nerve process to a mind-process, we reach a new field. Often the connection between the two cannot be understood for want of a common intelligible link. We may by pragmatic common sense disregard this difficulty, although we have no starting point for analysis of mental function. "The relation of mind to brain," to quote Sherrington again, "is not merely unsolved but still devoid of a basis for its very beginning. I am not a defeatist, for I would urge active pursuit of the enquiry. Even on the old line of deciphering principles of action of the brain in its management of muscle in the hope of clues to its ways of working in regard to mind. Not that any reflex principle seems applicable to mental activity. The reflex implies an end-result at which the nerve-process having shot its bolt stops and goes no further. But attempted correlation of mind with brain activity indicates for the latter through-line processes which are in no sense end-effects at all. Nevertheless, there are broad analogies. May we not think that anyhow there is no transmission from a, so to say, mental power-head, but a subtle spread of action over an unstable train, its strength at any point resting on the stability at that point. A ghost may be a very weak visual stimulus and yet release a large mental reaction."

The problem, however, is not entirely without hope, for one can hardly escape the inference that nerve inhibition must be a large factor in the working of the mind. The definite limits of exploration are not yet attained. The problem "will long offer to those who pursue it the comfort that to journey is better than to arrive, but that comfort assumes arrival." If man should arrive at an understanding of brain thinking, he "will certainly attempt to improve its ways of doing so, restraining some parts, amplifying others, introducing short cuts, and, certainly, increasing speed and aiming at economy and devising as seems to him best." Such is the aim of the neuropsychologist.

*Sherrington, Sir Charles. *The Brain and Its Mechanism*. Cambridge: The University Press. New York: The Macmillan Co., 1933. p. 35.

been assembled. There are now, as you may reckon them, three or four art shows in Boston, and as to *interest* this one ranks high

Obviously, necessarily, it includes some things that could be more expertly done technically, but even the technique is surprisingly good, often admirable.

And we have here the output of men who have worked without thought of gain, without any respect for criticism, who have *done something they wished to do* And that is the charm of the exhibition.

Dr W W Harvey's work stands out. Seven years ago, at the first doctors' art exhibit, he had vision without mastery He has learned a professional technique and shows delightful aquarelles, one at least eminently admirable

Dr J H Means and Dr Harold W Dana, competent watercolorists, are well represented.

Dr F C Irving shows a view much discussed pro and con a lake and far shore seen under pines One birch tree might be omitted from the composition, but it is good and full of right feeling

Dr J C Janney's portrait of the old derelict and the head of a girl are especially noteworthy, as well as two of his landscapes

Dr S H Sturgis has an admirable oil study of a boy's head in profile, and a "cloudscape" by Dr M A Gilbert is worth mention.

Dr F B Talbot's still lifes are amazingly good especially the African daisies, and of like meticulous and delicate workmanship are Dr J D Barney's lovely flower drawings Dr L W Baker's pencil portraits and heads by Dr E C Romberg done in his odd ingenious gold method are excellent.

In sculpture Dr W B Cannon shows two interesting heads, and Dr S C Wiggin has several pieces, and is at his best in the delightful group of three children and in the toddling boy

Dr F J Cotton has many things competent and whimsical, which interest many people. The overmantel design, Says I to He, seems to have won attention and discussion. His "Elderly Faun" is again shown

Dr H P Mosher has an admirable bit in Imhotep the first physician and quaint and interesting wood carved reliefs One wishes that he would with his ability, enlarge his scope and scale as he so well could.

Not to be overlooked is Dr L W Hill's case of 'decoys' — wonderful wood carvings of wild ducks, lovely in color and finish.

In the end the impression is of work done with pleasure in the doing of it.

This sketch does not deplete all of the very interesting products of the doctors' conception of art, and without doubt some not here mentioned may get a blue ribbon That is the trouble in trying to call attention to the work of artists but visitors may feel that adequate discrimination has not been exercised by the author of this reference

A Committee of well known artists of Boston, consisting of Charles H. Woodbury and Herman D. Murphy, painters, Joseph Coletti, sculptor, and Anthony J. Philpott, art critic, met at the Boston Medical Library on Monday afternoon, April 30, and awarded first places to the following exhibitors

Oil painting "Portrait" By James C. Janney, M.D.

Water color "Mt. Haystack, Vt." By William W. Harvey, M.D.

Pencil drawing "White Pine Blossoms" By J. Dellinger Barney, M.D.

Sculpture. "Helen." By Walter B. Cannon, M.D.

CORRESPONDENCE

THE ENLARGED BULLETIN OF THE AMERICAN SOCIETY FOR THE CONTROL OF CANCER

April 26, 1934

Editor *New England Journal of Medicine*,

The monthly *Bulletin of the American Society for the Control of Cancer* has been recently enlarged and expanded. It contains articles of interest and significance to members of the medical profession who are concerned in the treatment of cancer, as well as to those physicians who are interested in the control of the disease.

A subscription to the *Bulletin* is included in the annual membership of the Society (\$5.00), but it may also be obtained at a cost of \$1.00 a year by those who do not wish to become members. A number of physicians in other states have been glad to avail themselves of the opportunity to keep their information up-to-date on the subject. Sample copies of the *Bulletin* will be sent immediately on application to the office of the American Society for the Control of Cancer, 1250 Sixth Avenue, New York City.

Sincerely yours

CHANNING C. SIMMONS, M.D.,

Chairman, Massachusetts Committee,
American Society for the Control
of Cancer

THE RELATION OF PUBLIC HEALTH TO PRIVATE PRACTICE

To the Editor

At a recent meeting of my district society an address was given on The Relation of Public Health to Private Practice. The discussion that followed was illuminating. One physician said that he should (for the price of a visit!) be allowed to take down a measles quarantine card rather than have that service performed by a public health nurse! Does he not realize that it is because of that attitude that he is not employed more? If he were a layman would he feel that it was fair to have to pay for the visit of a supposedly skilled man to have that unskilled function performed? Small wonder that

MISCELLANY

A GROUP OF SCIENTISTS WILL VISIT THE BELGIAN CONGO

Six scientists will visit the Belgian Congo for the purpose of studying tropical diseases

The party consists of Dr Richard P Strong, the leader of the expedition, and the following named persons Dr Joseph C Bequaert, entomologist, Dr Jack H Sandground, helminthologist Hendy E Mallinckrodt, laboratory assistant and photographer Stuyvesant Pierpont, Jr, zoological assistant, and Byron L Bennett, technician

RESOLUTIONS ADOPTED UNANIMOUSLY BY THE EXECUTIVE COMMITTEE OF THE BOS TON HEALTH LEAGUE ON APRIL 26, 1934

The Executive Committee of the Boston Health League has the greatest confidence in the wisdom and ability of the members of the Survey Committee which recently made recommendations for curtailing the budget of the Health Department of the City of Boston Without having seen the tentative budget presented by the Survey Committee, and not being in possession of all the information upon which the recommendations were based, the Executive Committee of the Health League is unable to discuss the recommendations specifically Nevertheless, the Executive Committee believes

(1) That a permanent reorganization of the Health Department along modern lines as proposed by the Survey Committee should be undertaken

(2) That much money could be saved by so doing without serious impairment of service

(3) That any budgetary curtailment which may be decided upon for the Health Department should be based upon principles of effective public health administration.

(4) That a strong Advisory Council for the Health Department is essential

SUFFOLK DISTRICT MEDICAL SOCIETY

ENDORSEMENT OF THE REPORT OF THE SURVEY COMMITTEE

At a meeting of the Suffolk District Medical Society held April 25, 1934, the report of the Survey Committee appointed by his Honor the Mayor of Boston, to make recommendations relating to the Budget of the Health Department of the City of Boston, was unanimously endorsed

BLINDNESS DUE TO TRACHOMA

New York City, April 21.—'Although trachoma is the principal cause of blindness throughout the world, this eye disease is well under control in the United States and is comparatively rare in our large cities,' declared Lewis H Carris, Managing Director of the National Society for the Prevention of Blindness, just before sailing for Europe with Mrs Carris on the SS Caledonia at noon today Mr Carris and Dr Park Lewis of Buffalo, N Y,

will represent the United States at the joint meeting of the International Association for Prevention of Blindness and the International Organization Against Trachoma in Paris on May 14

'I am very happy to announce,' said Mr Carris, 'that reports from the United States Public Health Service which have just reached us indicate a downward trend in the prevalence of trachoma in this country The disease is reportable here, and for many years we have refused admission to immigrants showing symptoms of it. In the United States, trachoma is found mostly in the Ozark and Appalachian Mountain regions and among the Indian tribes of the southwest, poverty and unsanitary living conditions are important factors in its contraction and spread

'The ravages of trachoma are horribly severe in China, India, Egypt and other countries of the Orient and the Near East. Even in countries with well organized and extensive ophthalmic campaigns for the relief and cure of sufferers, it cannot be hoped that trachoma will be materially reduced until economic and general living conditions are improved and education in hygiene has developed sanitary living This disease, the greatest single world cause of vision impairment and blindness, constitutes a serious challenge to all national and international health and public welfare agencies

'The specific germ which brings on trachoma has not been definitely established, recent investigations, however, furnish clues that are expected to clear up this mystery which has baffled medical men for centuries Great progress has been made through the research of Dr P K Olitsky and the late Dr Hideyo Noguchi of the Rockefeller Institute laboratories in New York City'

Mr Carris has directed the movement for the conservation of vision in America during the last twelve years He is also the American Correspondent of the International Association for Prevention of Blindness which he and Dr Lewis assisted in forming at The Hague in 1929 Dr Lewis is Vice-President of both the American Society and the International Association for Prevention of Blindness.

PHYSICIANS' ART SOCIETY OF BOSTON

There is a very interesting exhibit of painting, sculpture, and crafts by doctors now in its second week at the Boston Medical Library

There is a queer logic about avocations Doctors as golfers do not excel as a rule, but it is no news that physicians, weary of people and of talk, turn to pursuit of the silent fish No sadism in this or satiety of talk.

And so the doctor skilled in observation, skilled in varied forms of manipulative technique learns a new technique, that of the silent hands—goes back, may one say, from the talkies to the voiceless drama

And so have a group of our colleagues done. A small, peculiar, definitely interesting exhibit has

NOTICE

MEDICAL STUDY TRIP TO HUNGARY

At the invitation of the Hungarian Medical Postgraduate Committee of Budapest, Professor Emil de Grosz President, and of the Association 'Budapest Town of Medicinal Springs' Archduke Dr Joseph Francis, President, a medical study trip to Hungary is being organized. The plans provide for a fortnight visit to Hungary during which there will be postgraduate lectures and demonstrations in English at the principal University clinics and at the municipal thermal baths and springs. Reduced railroad fares and hotel rates are granted by the Hungarian Government. The party will sail from New York on August 18 1934 visiting Munich and Oberammergau en route. The return trip may be made optionally, via Berlin Paris, or Italy arriving back in New York on September 30.

American physicians of good standing are invited to join. The American Committee of the study trip consists of Harlow Brooks M.D. Chairman Charles G. Kerley M.D. Jerome M. Lynch M.D., Wendell C. Phillips, M.D. and Erwin Torok, M.D. Richard Kovacs M.D., 110 Park Avenue, New York City, is Secretary.

REPORTS AND NOTICES OF MEETINGS

THE GREATER BOSTON MEDICAL SOCIETY

The Greater Boston Medical Society met on the evening of April 17 in the amphitheatre of the Beth Israel Hospital. Dr F. H. Lahey spoke on "The Management of Cholelithiasis and Biliary Tract Disease."

In speaking of the diagnosis of biliary colic Dr Lahey stated that the pain with its typical radiation offers little difficulty to the clinician. If the pain has subsided when the patient is first seen a very useful finding for the diagnosis is residual tenderness in the right upper quadrant. This symptom depends upon the fact that inflammation almost invariably accompanies biliary stones that give symptoms.

There are two chief types of stones found in the gallbladder. The pure cholesterol stone is the only silent stone and even this frequently gives symptoms by plugging the cystic duct and damming up the bile in the gallbladder so that it stagnates and becomes infected. The other type of stone is the calcium bilirubin calculus which is the one most frequently found in the pathological gallbladder. In this latter group of cases we quite frequently find the stones incidentally at operation or when an x-ray is made for some other purpose. But a careful investigation into the history almost invariably discloses some vague digestive discomfort or disturbance. The early diagnosis of gallbladder disease is therefore only possible by scrupulous attention to what the patient considers only minor symptoms.

In such cases the dye test has proved invaluable as a diagnostic aid. Owing to the many unfavorable

reactions to the use of intravenous dye Dr Lahey advocates the administration by mouth routinely and by the use of the intravenous method for questionable cases. The intravenous route should not be used in patients who have arteriosclerosis, or coronary disease and, in the experience of the speaker, subacute cholecystitis has probably been aggravated to the acute stage by intravenous administration of the dye.

The interpretation of the dye test should be seasoned by the clinical findings. Such conditions as acute peptic ulcer, pregnancy and spastic colitis frequently show a non-functioning gallbladder when the dye is given by any route. Then again one finds cases with typical gallstone colic that show a normally filling viscus. In such instances one should operate in spite of the dye test.

The speaker made an especial plea for early diagnosis of gallbladder disease because the mortality increases directly with the duration of the disease. Once cholelithiasis has been diagnosed whether as an incidental finding or as a possible cause of symptoms, operation should be advised. If the patient goes on to old age and develops a chronic cholecystitis he is not nearly so favorable a risk for operation. Then again he may at any time develop an acute cholecystitis in which condition he is a much poorer operative risk.

The entire question of early surgery for cholelithiasis hinges on the damage upon the biliary tree and the liver caused by the resultant infection. In this connection Dr Lahey compared gallbladder surgery with surgery on the prostate gland. Formerly the surgeon felt that his patients died from bladder sepsis when he removed the prostate gland, but now he realizes it is largely a question of kidney reserve. So in gallbladder disease the operative mortality depends upon the degree of encroachment of liver reserves by the ascending infection. To wait until the patient has had repeated attacks of biliary colic is to invite end-stage pathology with a contracted gallbladder, cholangitis and curtailed liver reserve.

In this connection Dr Lahey showed slides of x-ray films that depicted various stages of dilatation in the biliary tree. Lipiodol had been injected into the common duct postoperatively and in cases of long-standing gallbladder disease even the smallest radicals of the hepatic duct were widely dilated while the common duct was several times normal size showing the effect of back pressure upon the biliary tract.

By means of lantern slides the speaker brought out certain important points in surgical technique. Quite frequently patients find themselves suffering from the same symptoms that brought them to operation after the gallbladder has been removed. This may be the result of extensive liver damage from ascending infection but quite as often it is caused by adhesions forming between the liver bed and the duodenum owing to incomplete closure of the peritoneum over the bed of the gallbladder.

Strictures of the common duct are related largely to improper handling of the cystic artery during the

physicians are having hard sledding and that the public clinics are crowded!

Other criticisms made showed how little doctors realize how much health organizations do for us. The general feeling seemed to be that health departments, through the baby clinics, T. A. T. clinics, etc., take patients from practitioners. As a matter of fact most such clinics were started by private agencies, and were only taken over by the health departments on the request of the agencies after their value had been demonstrated. The medical profession did nothing toward this, had it, it would have been "advertising" unethically. But now that the public has been educated we doctors feel that something has been "slipped over" on us here is an apparently "good thing" and we ought to "bone in." We do not seem to realize that every child who comes to our offices for T. A. T. does so directly or indirectly because of the influence of the clinics that every child who comes for an examination and follow up, when well, does so for the same reason and that many children who would never have been known to need corrective work have been sent to us because clinics have discovered defects.

Some years ago during a rabies scare, two doctors offered to vaccinate any dog whose owner brought it to a "clinic." The only charge made was for the vaccine. The veterinarians of the town protested that their province was being invaded. A check up was made, and it was found that for every dog clinic treated, an owner went to a veterinarian and had his dog immunized privately. Had it not been for the clinic, probably none of these would have been done.

The fact that the distribution to private physicians of material from the State Laboratory is greater in those towns where public clinics are most active is a well known fact, and one on which only one possible construction can be put. Instead of combating clinics we doctors should be backing them wholeheartedly, both from selfish and altruistic motives.

Once upon a time a child went out into the world seeking happiness, but he could not find it. A fairy met him and told him to stop looking, but to give away as much happiness as he could. The first thing the child knew, he found that he had more happiness than he knew existed in all the world. We do not seem to realize that, hard hit as we are, others have been hard hit, too. Some day the depression may end. But the depression is not the real trouble, the real trouble is that we are all too selfish.

ANONYMOUS

April 22, 1934

RECENT DEATHS

THE PASSING OF DR WILLIAM H. WELCH

All over the world there will be a feeling of sadness in the minds of those who know of the accom-

plishments of the great leaders in medical progress in noting the decease of Dr. William Henry Welch, April 30, 1934.

The *Journal* will make especial reference to the life of this eminent physician in next week's issue.

MACDONALD—COLIN WILLIAM MACDONALD, M.D., of 31 Hampstead Road, Jamaica Plain, Mass., died April 20, 1934.

He was born in 1858 and graduated in medicine from the Bellevue Hospital Medical College in 1887.

Dr. Macdonald practiced in Roxbury for many years. He retired from practice in 1933 and moved to Jamaica Plain. Evidence of his position in his community appears in the record of attendance of state officials and other distinguished persons at his funeral.

He joined the Massachusetts Medical Society in 1887 and was retired as of December 31, 1933. He was a member of the Council for a great many years and a past president of the Norfolk District.

Dr. Macdonald is survived by his widow, Mrs. Helen A. Macdonald, two daughters, Miss Isabel Macdonald and Mrs. John Hennessey, and one son, William C. Macdonald.

POST—ABNER POST, M.D., of 130 Brattle Street, Cambridge, died April 20, 1934. He was born in 1844, the son of Sylvester Gilbert Langdon and Sarah Marie (Post) Langdon. By request of his maternal grandfather, he changed his name to Abner Post when he was twelve years of age.

He was educated at Williston Seminary, East Hampton, Massachusetts, and graduated from Yale in 1866. Harvard University Medical School gave him his M.D. degree in 1870. He served as intern at the Massachusetts General Hospital, as assistant surgeon at the U. S. Marine Hospital at Chelsea, surgeon at the Boston City Hospital, and the Children's Hospital. He was on the staff of the Boston Dispensary for several years.

He was the oldest living Emeritus of the Harvard Medical School faculty, and a member of the honorary staffs of the Boston Dispensary, the Boston City Hospital, and the Massachusetts General Hospital. He joined the Massachusetts Medical Society in 1870, and was a Fellow of the American Medical Association, a member of the American Association of Genito-Urinary Surgeons, the American Dermatological Society, and the New England Dermatology Society. He served as Assistant Editor of the *Boston Medical and Surgical Journal* during the years 1881-1890, and was author of many monographs dealing with genito-urinary diseases.

He was a member of the St. Botolph, the University of the Yale, and the Harvard Clubs.

His wife, Laura Knight Post, died in 1927. He is survived by a daughter, Mrs. Stephen A. Breed, a granddaughter, and General Jesse F. Stevens, his stepson.

expansion, lessened capacity for work, and a striking absence of fever. There are characteristic x ray findings and persons afflicted with this disease show a distinctly increased susceptibility to tuberculosis.

Silicosis is an exclusively occupational disease. It is not contracted from the atmospheric dust on windy days, because our natural defenses are well able to protect us from the inhalations of dust occurring under ordinary circumstances. It is only when exposed to atmospheres very heavily laden with particular kinds of dusts such as occur in some industries that our natural defenses break down. For the development of silicosis, the silica inhaled must be free (not combined) and the particles must be under ten micra in greatest diameter. The number of particles per cubic foot of air must be very large. Individual susceptibility plays no part in this disease except in cases of preëxisting pulmonary disease. Dr Lanza has observed, however, that Negroes stand silicosis much more poorly than white men.

The action of silica in producing pulmonary changes is physico-chemical and as well as producing fibrosis leads to a greatly increased susceptibility of the tissues to the tubercle bacillus. The fibrotic process begins in the subpleural region and gradually progresses toward the hilum. In the absence of tuberculosis necrosis with cavity formation does not occur. Hemoptysis is seen very occasionally. The blood pressure is of no diagnostic significance. The picture is entirely different if a tuberculous process is aroused leading to the rapidly fatal outcome of "galloping consumption." There is usually a striking difference in silicosis between signs and symptoms. A patient may have distressing dyspnea using all his accessory muscles of respiration, and yet on physical examination one may find hardly more than somewhat diminished breath sounds. The presence of moist râles always means a superimposed infection.

Silicosis has long been associated with the mining industry (cf. "miners' phthisis"). The miners themselves have learned to distinguish the catching from the "not-catching" variety of consumption. The danger of silicosis in mines is entirely dependent upon whether the ore is deposited in a silica containing bed. The diagnosis of silicosis is made from a history of exposure and a characteristic x ray film. The latter shows in the early stages a generalized arborization in both lung fields with some discrete fibrotic nodulation. In the latter stages the typical snow storm appearance is produced.

From the medico-legal standpoint, the disease is classified according to various stages for purposes of determining compensation. The most recent classification is as follows:

1. Definitely negative.
2. More fibrosis than usual.
3. Decidedly more fibrosis than usual.

The above three groups are considered as negative. X ray appearances falling in the following three groups are considered positive:

4. First stage silicosis. These cases show definite discrete nodules by x ray, but are able to work.

5. Second stage silicosis. These are characterized by larger nodules and the diaphragm is frequently distorted. Their capacity for work is impaired.

6. Third stage silicosis. In these cases there is a coalescence of nodules and the patients are unable to perform any work.

Once the diagnosis is established, the prognosis is invariably poor. The majority die of tuberculosis. There is no treatment other than symptomatic for the disease, but the patients do live longer if they are kept up and about as long as possible rather than in bed. Pneumonia is a serious disease in patients with silicosis and lobar pneumonia commonly terminates in empyema.

Dr Lanza discussed other factors of importance in silicosis among them age, preëxisting pneumoconiosis and syphilis. Men over forty years of age develop silicosis twice as rapidly as younger men, and a preëxisting pneumoconiosis such as from coal dust, makes the lungs very much more susceptible to silica. Silicosis also develops about twice as rapidly in luetics. Hence it is essential that persons with strongly positive Wassermann reactions in a silicosis community receive adequate antiluetic treatment.

The prevention of silicosis is a difficult problem. The control of dust from its point of origin by means of water, exhaust ventilation, or the two combined has been of only moderate success. Once the dust is in the air, no practical means has been devised as yet to keep it from being inhaled. Dr Lanza discussed methods of dust sampling and mentioned the work being done along these lines in Dr Drinker's laboratory at the Harvard School of Public Health.

The medical supervision of employees in the silicosis trades is only palliative and an acknowledgment of the impossibility of eliminating the dust from these trades at the present time. Dr Lanza discussed the serious economic problems involved in dismissing a skilled workman from his trade because of early silicosis. The silicotic with a superimposed tuberculous infection however is a definite menace and should be pronounced disabled regardless of any other consideration.

The remainder of the lecture was devoted to the relatively more modern disease Asbestosis. This disease is due to the inhalation of a combined silicate of magnesia, zinc and nickel. The particles involved in this disease are much larger than in silicosis and they are not carried off by the lymphatics nor do they obliterate the alveoli, as occurs in silicosis. A collar of connective tissue is formed in the lung like a fine web spun criss-cross throughout the lung. Asbestos bodies were first described in 1924. They are yellowish to brown needle-like bodies often with a rounded knob at either end. Their presence in the sputum means exposure to asbestos dust and not necessarily asbestosis.

operation The artery and duct should always be ligated separately and the artery should be tied off and cut early in the operation. This latter step is important in so far as the cystic duct pursues a tortuous course compared with the artery and hence any tension on the gallbladder is referred to the cystic artery with danger of tearing it. In the event of bleeding from the artery, one should not grope blindly and attempt to snap it for fear of including the common duct in the hemostat, but by placing a finger in the foramen of Winslow exert pressure on the hepatic artery and thus control the hemorrhage while a hemostat is placed on the bleeder

In recent years the speaker has opened the common duct more frequently than before, with the result that an increasing percentage of stones has been found in the duct. A history of jaundice is not the sole criterion for opening the duct since 36 per cent of patients with proved common duct stones have had no jaundice. Any of the following findings should lead the surgeon to explore the common duct

- 1 A history of jaundice
- 2 A dilated common duct.
- 3 Palpation of a stone in the duct.
- 4 Thickening of the duct.
- 5 A contracted gallbladder

At present Dr Lahey opens the common duct in 46 per cent of cases operated upon for gallbladder disease and in 21 per cent of cases stones are found. With increase in the percentage of choledochotomy the mortality rate has declined measurably, for it removed the chief cause of blockage and resultant hepatic infection. The mortality rate for the past year was 17 per cent.

Among the postoperative patients one finds occasionally that colic persists as a symptom. In such cases duodenal drainage is of great help in determining whether a stone has been left in the common duct, for 96 per cent of the cases with cholesterol or calcium bilirubin crystals show common duct stones. When gradual, painless jaundice develops after removing the gallbladder, a stricture of the common duct should be suspected.

Courvoisier's law states that obstruction of the common duct by a stone is accompanied by a contracted gallbladder, while obstruction due to other causes gives a dilated gallbladder. Dr Lahey stated that if we add to the criterion of obstruction (1) painless, progressive jaundice and (2) persistent stools with absence of bile the law is of much greater assistance in making the differential diagnosis.

Dr Lahey spoke of the invaluable aid given by intravenous administration of glucose to the patient postoperatively. This is of benefit in sustaining the hepatic reserve and in preventing hemorrhage. In the event of postoperative hemorrhage, transfusion of whole blood should be used without stint. A brilliant example of this was a case receiving a total of eleven transfusions after operation with recovery.

The speaker advocated spinal, supplemented with local as the ideal anesthetic for gallbladder surgery. The next best is ethylene gas, then gas-oxygen, then ether, and last of all chloroform. The last two tend to produce liver damage and jeopardize an already handicapped organ.

An interesting discussion followed the paper and the meeting adjourned at 10 20.

THE WORCESTER NORTH DISTRICT MEDICAL SOCIETY

The seventy fifth annual meeting of the Worcester North District Medical Society was held at the Burbank Hospital, Fitchburg, Mass., at 1 P.M. Wednesday, April 25.

The annual oration was delivered by Dr Andrew R. MacAusland of Boston. His subject was "Recent Trends in the Treatment of Fractures." His talk was most interesting and thoroughly enjoyed by the forty five members present.

His Honor, Mayor Robert E. Greenwood, president of the board of trustees of the hospital, extended the greetings of the city to the physicians.

A committee was appointed to revise the old by laws which have been in use since 1887. A fine chicken dinner was served by the hospital. The following designated officers were elected for the ensuing year.

President C. B. Gay, Fitchburg
Vice-President C. H. Jennings, Fitchburg
Secretary F. M. McMurray, Fitchburg
Treasurer F. H. Thompson, Jr., Fitchburg
Commissioner of Trials H. R. Nye, Leominster
Councilors F. R. Dame, Athol, T. R. Donovan, Fitchburg, A. F. Lowell, Gardner, H. R. Nye, Leominster, W. F. Sawyer, Fitchburg
Censors Supervisor, T. R. Donovan, Fitchburg, J. J. Curley, Leominster, George Mossman, Gardner, F. H. Thompson, Jr., Fitchburg, A. A. Wheeler, Leominster

FRANCIS M. MCMURRAY, M.D., *Secretary*

THE CUTTER LECTURE ON PREVENTIVE MEDICINE

The Cutter Lecture on Preventive Medicine was given in the Amphitheatre of Building E at the Harvard Medical School on Friday, April 20, at 5 P.M. The speaker was Dr. Anthony J. Lanza, assistant medical director of the Metropolitan Life Insurance Company. Dr. Lanza, introduced by Dr. Milton J. Rosenau, has been a member of the United States Public Health Service and of the Rockefeller Foundation and has been interested for many years in medical problems connected with the mining industries. The subject of his lecture was "Silicosis and Asbestosis."

Silicosis was described as a disease due to breathing air containing silica (silicon dioxide) which leads to definite fibrotic changes in the lungs. The clinical picture is characterized by dyspnea, decreased chest

should be controlled not by insurance companies but by the medical profession. Insurance for hospitalized illness is well recognized in England and it has been established in 25 cities in this country, while plans are maturing in 50 other cities.

In conclusion, Dr. Smith emphasized the need for study, experiment, and the maintenance of an open mind among those who deliver medical service.

SOUTH END MEDICAL CLUB

At the regular monthly meeting of the South End Medical Club held on April 17, 1934, Dr. Richard M. Smith, Assistant Professor of Pediatrics and Child Hygiene of the Harvard Medical School, was the speaker.

His subject was "Acute Abdominal Conditions in Children." An abstract is as follows:

One of the most frequent conditions in children for which the physician is consulted is abdominal pain. In infants, serious disease within the peritoneal cavity may exist without complaint of pain. Careful judgment is necessary in both conditions to determine the exact pathological state for treatment of the various possible conditions is widely different.

In dealing with children, one must constantly bear in mind the possibility—one might almost say, so far as infants are concerned, the probability—that some congenital anomaly or retarded developmental process is responsible for the pathologic state.

Some of the common conditions giving rise to acute abdominal symptoms in infants and children will be considered from a diagnostic and medical point of view, as the general practitioner is usually the first physician called to see the ill child and upon his skill at that time may depend the life of the patient.

There was a discussion of congenital hypertrophic stenosis of the pylorus, intussusception, intestinal obstruction due to congenital abnormalities, appendicitis and its special signs and symptoms in children, abdominal symptoms associated with acute respiratory infections, diseases of the kidney producing abdominal signs, spastic colon, abdominal tumors, abdominal purpura, and allergic conditions.

With these possibilities in mind, it is important for the physician to secure in the first instance an accurate history, remembering that the facts may be colored in presentation by the point of view of the mother. Inspection should be carried out carefully before the child is disturbed and then the local examination made, recognizing the importance of slight physical signs. The rectal examination should be made last but not omitted. There should be a careful general examination, especially of the lungs for early signs of pneumonia, of the heart for evidences of general infection, of the throat and ears for signs of upper respiratory disease, and the skin for evidence of purpura and general septicemia. Certain special examinations should be made. In almost every instance, a white blood count and a urine examination and in many instances an x-ray

without barium to determine the presence of gas within the intestinal tract. In some instances, a barium examination also should be made as it is of particular interest in revealing the condition of the colon.

MASSACHUSETTS TUBERCULOSIS LEAGUE ANNUAL MEETING

The twenty-second annual meeting of the Massachusetts Tuberculosis League was held at Hotel Statler on April 12, 1934. Approximately one hundred members of the League and its twenty-eight affiliated organizations were present from all parts of the State.

The proceedings began with the annual address of the President, Dr. Frederick T. Lord, in which he pointed out the progress made by the League and its branches during the past year. He stressed the importance of cooperation with the State and County Sanatoria when they take on the work of the Chadwick Clinics. In the latter part of this year, the ten-year period for the Chadwick Clinics terminates with the end of the current school year in June. Under the plan developed for State-wide continuation of the Clinics, the State and local Sanatoria, cooperating with the local school boards, will continue the service wherever possible.

Frank Kiernan, Executive Secretary, gave an account of the work of the League, bringing out the outstanding accomplishments since April, 1933, which included a tuberculosis survey of Cambridge, an intensive study of one of the Summer Health Camps operated by an affiliated organization, and cooperation with the State and local public health authorities.

Miss Jean V. Latimer, Educational Secretary of the League, outlined the widespread and increasing use of the Tuberculosis Unit, prepared by her and published by the League last year. The Unit has been taken up in twenty states and is now being used in approximately one hundred high schools of cities and towns in Massachusetts.

At the annual luncheon meeting, the speakers were Dr. Henry D. Chadwick, State Commissioner of Public Health, and Dr. Kendall Emerson, Managing Director of the National Tuberculosis Association. The theme of their addresses was "Tuberculosis Programs in These Changing Times."

Dr. Chadwick addressed his considerations of this subject to problems in Massachusetts. He urged a closer cooperation of the volunteer tuberculosis associations and the State, County and local Sanatoria. He also recommended that the Tuberculosis Associations which operate Summer Health Camps should endeavor to secure more funds for the camp work from service organizations and constantly reduce the amount of Seal Sale money used in operating the camps. He indicated that it is the intention of the Department to endeavor to interest school physicians so that they will carry on tuberculosis testing of children as part of the school

The prominent symptoms in asbestosis are dyspnea and cyanosis. The latter is not found in silicosis. X-ray films often do not show sufficient changes to account for the symptoms. The common picture is a groundglass appearance in the lower portion of the lung fields. The shadows are softer than in silicosis and an unexplained cardiac enlargement is uniformly found.

Uncomplicated cases of asbestosis die of cardiac failure. The cases progress to a fatal termination even if removed from the faulty environment. The incidence of the disease is less among miners than in those engaged in the manufacture of asbestos. The relation to tuberculosis is unlike that of silicosis. In the examination of 300 cases of asbestosis, Dr. Lanza found little evidence of tuberculosis and he believes that tuberculosis when it occurs in asbestosis is a merely coincidental disease.

The problems of prevention and control are the same as in silicosis. In conclusion, Dr. Lanza emphasized the importance of previous occupation in the past history of any patient.

ECONOMIC ASPECTS OF MEDICAL PRACTICE

Dr. Richard M. Smith, member of the Committee on the Costs of Medical Care, presented a very interesting talk on the 'Economic Aspects of Medical Practice' on Monday, April 16, at 5 P.M. in the amphitheatre of Building C at the Harvard Medical School, under the auspices of the Phillips Brooks House Association.

In the past half century, medical men have devoted their time for the most part to the advancement of medical science with very little attention given to methods of rendering medical service. Medical service is primarily a personal matter and this relationship between doctor and patient prevailed in the rural communities of the past century. Industrialization, however, has complicated matters and various conditions of maladjustment have arisen. Among the existing difficulties, Dr. Smith mentioned the lack of coordination between the services of the specialist and the general practitioner. The latter is handicapped by being unable to judge the quality of medical care rendered. There is no available method at present for the standardization of the quality of medical service. Not only is there an inequality of service rendered, due to both natural endowment and training, but it is not equally distributed geographically. In California, for example, there is one physician per 570 population, while in South Carolina there is one per 1430. It has been estimated that to meet the demands 18 per cent of physicians should be specialists. Actual figures, however, reach 45 per cent, indicating an overabundance of specialists.

Dr. Smith discussed another group of difficulties under maladjustments in the utilization of medical facilities. This depends theoretically upon the need for medical services and the ability of people to pay for them. It was pointed out, however, that the actual demand for medical services is not the same as the

existing need for them. Even in the higher classes the demand is only 85 per cent of the need. Medical facilities are therefore not utilized, partly because the need for them is not always recognized and partly because people are unable to pay for them.

Statistics have shown that the total cost of medical care is quite unevenly distributed. About half the total cost has proved to be in connection with hospitalized illness. Dr. Smith presented a figure for the average net income of practicing physicians in 1929, which was \$5300. For salaried physicians it was \$4500. An important observation is that about 40 per cent of the physician's total income goes for overhead.

The remainder of the talk was devoted to possible solutions of the above problems. Dr. Smith pointed out that each community has to meet its own peculiar problems. He suggested the possibility of agencies, controlled by physicians, for the coordination of medical services. Careful consideration should be given to the type of medical student accepted for training as well as to the type of training offered. The development of specialists should be restricted. Fortunately there is a natural trend in this direction at the present time. The speaker favored the development of postgraduate instruction for the improvement of the quality of the service rendered by the general practitioner. Public Health activities should receive more adequate support.

The consensus at present is that most attention should be devoted to the development of the voluntary hospital. Adequate facilities for the study of patients would thus be offered in suburban districts and affiliations could be made with a metropolitan hospital for the use of more elaborate equipment or for the study of more complicated cases. The voluntary hospital would furnish a means for the supervision of the quality of medicine practiced and members of the staff would stimulate one another toward higher standards. Group Clinics are being tried at the present time but the difficulty seems to be that the personal relationship of the doctor, the patient and his family is impaired. Objections have arisen also against the control of medicine by the county medical societies.

Medical services may be paid for in three ways: (1) payment of individual fees, (2) taxation, and (3) insurance. The first is for the most part the method in vogue at the present time in this country. The second is recognized for the treatment of chronic diseases, for the army and navy, for public health and for the maintenance of local municipal hospitals. In the third or insurance method, we have to choose between voluntary and compulsory insurance. The latter can be effected only by the government and it would really lead to state medicine which may be undesirable. In countries where voluntary insurance was at first attempted the system ultimately was changed to the compulsory type. The Committee on the Costs of Medical Care believes that voluntary insurance ought to be tried but it

Tuesday, May 15, 1934, at 12 noon. The speaker will be, Hugh Barr Gray, M.D., Superintendent and Physician in-Charge, Washington Home, 41 Waltham St., Boston. His subject will be 'The Alcoholic.' All physicians are cordially invited to attend. The usual luncheon will be served.

THE HARVARD MEDICAL SCHOOL ALUMNI ASSOCIATION

The Annual Meeting of the Harvard Medical School Alumni Association will be held Saturday, May 12. Ward rounds (10 a.m. to 12 m.) and operations will be held at the Peter Bent Brigham, the Massachusetts General and the Boston City Hospitals. A business meeting and luncheon (\$1.00) will be held in the gymnasium of Vanderbilt Hall at 12:30 p.m.

PHI DELTA EPSILON FRATERNITY

On Monday evening May 7, 1934, at 8 p.m. the Phi Delta Epsilon Fraternity will hold its final Open Meeting of the year at the Evans Memorial Hospital Auditorium. The speakers and their topics for this program are Laurence B. Ellis, 'Postural Changes in Blood Pressure', Dr. Richard B. Capps, 'Vasopressor Substances in the Blood and Urine in Normal Subjects and in Patients with Arterial Hypertension'. Dr. Soma Weiss, 'The Etiology of Hypertension.'

NORFOLK DISTRICT MEDICAL SOCIETY

The Annual Meeting of this society will be held in the Crystal Room of the Hotel Kenmore May 8, 1934. Telephone Kenmore 2770.

The business meeting will be at 6 P.M., the annual dinner at 7 P.M. and following the dinner there will be an illustrated lecture entitled "The Romance of News Gathering" by Mr. Alton Hall Blackington.

Members are invited to have ladies accompany them as in the past. Tickets for members will be \$1.50 and for guests \$2.50. Reservation cards must be in the hands of the Secretary by Saturday, May 5th.

FRANK S. CRUICKSHANK, M.D., *Secretary*,
1695 Beacon St., Brookline

MIDDLESEX EAST DISTRICT MEDICAL SOCIETY

The annual meeting of the Middlesex East District Medical Society will be held at the Winchester Country Club at 1:00 p.m., Wednesday May 9.

Speakers will be Drs. C. R. Baisley of Reading, A. P. Aitken, M. J. Quinn and W. L. McKenzie of Winchester and T. E. Dinan of Wakefield.

A group picture has been arranged for

ALLAN S. CUNNINGHAM, M.D. *Secretary*

ESSEX SOUTH DISTRICT MEDICAL SOCIETY

Annual meeting Tuesday May 8, 1934 to be held at the Salem Country Club, Forrest Street, Peabody. Dinner at 7 P.M.

Speaker Dr. Paul Wakefield, Superintendent of Maine Central Sanatorium

Subject "Comparison of Public Health in China and America."

RALPH E. STONE, M.D., *Secretary*

WORCESTER DISTRICT MEDICAL SOCIETY

The Annual Meeting of the Worcester District Medical Society will be held during the afternoon and evening of Wednesday, May 9, 1934, at Worcester Country Club, Worcester, Massachusetts.

The many members will probably desire to play golf during the afternoon. The annual dinner will be served at 6:30 P.M. and this will be followed by the Business Session of the Annual Meeting at 7:45. The election of officers for the 1934-35 period will take place immediately after this business session.

The Annual Oration will be given by Dr. William F. Lynch and his subject will be "Our Early Heritage."

ERWIN C. MILLER, M.D., *Secretary*

NEW ENGLAND PEDIATRIC SOCIETY

Saturday Afternoon May 19, 1934, 2:30 D.S.T.

New Haven, Connecticut

Medical and Pediatric Amphitheatre

Room 1094, New Haven Hospital

789 Howard Avenue

2:30-2:45 — Clinical Presentation Dr. Grover F. Powers and Staff

2:45-3:00 — Mottled Enamel

Nutritional Aspects, Arthur H. Smith, Ph.D.

Clinical Aspects, Bert G. Anderson, D.D.S.

3:00-3:30 — Recent Advances in Nutrition of Interest to Pediatricians, Professor Lafayette B. Mendel.

Farnam Building, Room 2028

3:30-4:00 — Demonstration of Apparatus for Stimulating Excitable Centers by Remote Control, Richard U. Light, M.D.

Auditorium, Sterling Hall of Medicine

4:00-4:30 — The Developmental Diagnosis of Infant Behavior and Its Relation to Clinical Pediatrics. Illustrated by Motion Pictures, Arnold Gesell, M.D.

At the conclusion of this session members of the Society are welcome to visit the Clinic of Child Development.

New Haven Medical Association Building,
364 Whitney Avenue

5:00-6:00 — Social Hour

6:00 — Dinner

7:00 — Address by Dr. Louis C. Schroeder, New York City, "The American Academy of Pediatrics."

GERALD HOFFEL, M.D. *Secretary*

routine It is planned to examine the children in the seventh, ninth and eleventh grades, also to xray these children at the schools using a portable machine Interpretation of the xray pictures will be made by the sanatorium serving the school district. Dr Chadwick urged the affiliated organizations to have their nurses cooperate in helping promote these school examinations

Dr Kendall Emerson, Managing Director of the National Tuberculosis Association, discussed tuberculosis problems from the national point of view He stated that in the year 1934, there is no indication that new lines of attack on the tuberculosis problem are to be developed. He stressed the importance of intensifying the methods which have been proved to be successful here and which are gradually being adopted in other parts of the country He referred to the enormous problem of transients in the Southwest and described the attempts which the Federal Government is making to meet it. Formerly, the problem of the transients was a comparatively small one Now, with thousands of people constantly migrating from the North and East to the West and Southwest, it has become a menace to the health of the people in those sections of the country Dr Emerson emphasized the possibilities of health education open to nurses in their dealing with families and individuals in their field work He commended the League for its important contribution in the field of child health education through training teachers

The experimental work in the treatment of tuberculosis through the use of gold and BCG was described by Dr Emerson who stated that in America these methods are being constantly watched and in New York City an intensive experiment is being done with the Calmette treatment. The National Association neither approves nor disapproves of these proposed new methods but will advocate them if they are found to be successful after the experimental period

Dr Emerson concluded his address with a description of the work of the National Health Council, the Presidency of which has recently been assumed by Colonel Theodore Roosevelt.

At the election of Officers and Directors, the following were chosen for the year April, 1934 to April, 1935 President, Dr Frederick T Lord of Boston, Honorary Vice-Presidents, Dr George H Bigelow, Milton, Dr Henry D Chadwick, Boston Rt Rev William Lawrence, D.D., Boston, Rabbi Harry Levi, Brookline, and William Cardinal O Connell Brighton Vice-President, Dr Francis P Denny, Brookline, Treasurer, Mr Arthur Drinkwater, Cambridge Assistant Treasurer, Mr Romney Spring, Boston Executive Committee, Dr Walter P Bowers to succeed himself, Dr Alton S Pope to succeed himself and Mr Raymond S Patterson to succeed Mr William N Goodell, resigned, Clerk of the Corporation, Mr Frank Kiernan, Belmont. The Directors at Large are Mr Frederic Bailey, North Scituate, Dr George H. Bigelow, Milton,

Dr Walter P Bowers, Clinton, Dr Robert P Carpenter, North Adams, Dr Henry D Chadwick, Boston, Miss Josephine B Colt, Boston, Mrs Leslie B Cutler, Charles River, Dr Francis P Denny, Brookline, Mr Arthur Drinkwater, Cambridge, Dr C Benjamin Fuller, Waltham, Rev Walter F Greenman, West Newton, Mrs John D Henry, Boston, Dr William O Hewitt, Attleboro, Professor Murray P Horwood, Newton Centre, Dr Roger L Lee, Boston, Dr Frederick T Lord, Boston, Dr Carl C MacCorison, North Wilmington, Dr Richard P MacKnight, New Bedford, Mr David Moxon, Framingham, Mr Raymond S Patterson, Newton, Dr Alton S Pope, Newtonville, Dr Sumner H Remick, Waltham, Mr John Ritchie, Maiden, Mr Thornton K Ware, Fitchburg, Miss Margaret Welr, Beverly

The Representative Directors are Mr George E Dean, Falmouth, Dr Floyd R Smith, Pittsfield, Dr John B Hawes, 2nd, Boston Dr Donald S King Boston, Mr Alexander Wheeler, Boston, Miss Sarah Hyams, Jamaica Plain, Dr Garnet P Smith, Attleboro, Mrs Mabel Greeley Smith, Cambridge, Mrs E Frank Guild, Chelsea, Dr Olin S Pettingill, Middleton, Mrs H G Hamann, Swampscott, Mrs A. L Johnson, Orange, Mr Walter S Barr, West Springfield, Mr Clifton H. Hobson, Palmer, Hon. Clarence E Hodgkins, Northampton, Dr Frederick R Radcliffe, Haverhill, Dr S L Skvirsky, Holyoke, Mrs Frances B Mowry, Salem, New Hampshire, Mr Charles H. Hobson, Lowell, Mrs Carolyn M. Engler, Lynn, Dr Samuel Hoberman, Malden, Mr Richard C Maloney, Nantucket, Dr James F Brewster, New Bedford, Mrs Allan Shepard, Newburyport, Mrs Charles Riley, Chestnut Hill, Dr Nahum R Pillsbury, South Braintree, Mrs William C Rogers, Cohasset, Mrs Ralph S Drury, North Leominster, Mrs B Milo Burke, Brockton, Dr J Frank Donaldson, Salem, Mrs Albert Cross, Weston, Mrs T F Kimball, Belmont Rev J F McGillicuddy, North Brookfield, Mrs Chandler Bullock, Worcester, Dr Arthur K Stone, Framingham Center

WILLIAM HARVEY SOCIETY

The next meeting of the William Harvey Society will be held Friday, May 11 in the Auditorium of the Beth Israel Hospital, Boston, at 8 P.M.

PROGRAM

Speaker Dr Archibald Malloch, Librarian, New York Academy of Medicine

Subject "William Harvey"

Chairman Dr Charles F Painter, formerly Dean, and Professor of History of Medicine, Tufts College Medical School.

SOUTH END MEDICAL CLUB

The next regular meeting of the South End Medical Club will be held at the office of the Boston Tuberculosis Association, 554 Columbus Ave, Boston, on

The New England Journal of Medicine

VOLUME 210

MAY 10, 1934

NUMBER 19

NEW ENGLAND SURGICAL SOCIETY

A STUDY OF TWO HUNDRED AND THIRTY-SIX COMPOUND FRACTURES TREATED AT THE MASSACHUSETTS GENERAL HOSPITAL*

BY ERNEST M. DALAND, M.D.†

DURING the period 1923 to 1931, two hundred and thirty-six compound fractures were treated in the wards of the Massachusetts General Hospital besides compound fractures of the skull, face and jaw, which are excluded from this report. Two hundred and fourteen were fresh fractures and twenty-two were old cases. The end results are known in one hundred and fifty-one fresh cases and eighteen old cases.

The treatment of compound fractures involves the double problem of dealing with the fractured bone and the injury to the soft parts. The purpose of this study is to determine from our own experience what is the most satisfactory method of handling lesions of this type.

The damage to the soft parts varies according to the mechanism of the fracture and according to the degree of trauma. The damage is not so great when the fracture is due to indirect trauma, in which case the bone ends are forced out through the skin, as it is when an external force injures the soft tissues before breaking the bones. We have classified these compound fractures as follows:

- 1 Indirect violence
 - a Puncture wounds
 - b Extensive soft tissue damage occurring from within out
- 2 Direct violence
 - a Cuts, lacerations and bullet wounds
 - b Extensive wounds from massive trauma

By "sepsis" in this report, we mean the development of a purulent discharge in the wound. Minor stitch abscesses have been included as septic wounds even though they were not serious enough to change the result.

TREATMENT

On entry to the hospital, morphine is given in sufficient quantities to relieve pain. The wound is carefully inspected to determine the amount

of soft tissue damage. Injuries to blood vessels, nerves, muscles and tendons are noted, and a decision is made as to what structures can be saved and what must be sacrificed. The skin around the wound is cleaned with benzine and is shaved, the operator shaving away from the wound with a sterile razor. Ether is used to dry the skin. Iodine is then applied to the skin and the wound covered with a sterile dressing. In some instances no further attention may be paid to the compound wound, but later we shall learn whether such treatment is safe. The patient is then ready for a more careful palpation of the fractured bones and for an x-ray examination. Temporary splints must be applied before the patient is transported to the x-ray department.

Antitetanic serum is given to all patients with compound fractures. A preliminary test is made to determine possible sensitivity to horse serum by injecting 0.1 cc. of the antitetanic serum intradermally. If there is no skin reaction in twenty minutes, an intramuscular injection of 1500 units is given, if the patient is an adult. A child receives a lesser dose, according to his age. If the patient is sensitive to horse serum, he is desensitized by giving small amounts subcutaneously at half-hour intervals. The doses are gradually increased until the full amount is given. Adrenalin is used to combat any untoward reaction.

If the wound is more extensive the same preliminary treatment is carried out. x-rays taken and the patient sent directly to the operating room. In the meantime a visiting surgeon has been called and he usually carries out the operative treatment. If shock is present, the patient is kept on the "shock table" until transportation is thought safe. Occasionally operation is done with him still on the "shock table." Ether or gas oxygen is the anesthesia of choice.

The operative procedure consists of a thorough debridement. The wound must be opened up widely and the bone ends exposed. Four to ten quarts of normal salt solution are used to irrigate all parts of the wound thoroughly, the assistant opening up various parts of the wound. This is a very important feature of the treat-

*From the Fracture Service of the Massachusetts General Hospital.

Read at the Annual Meeting of the New England Surgical Society September 30, 1933 at Boston.

†Daland, Ernest M.—Chief of Surgical Out Patient Service, Massachusetts General Hospital. For record and address of author see "This Week's Issue" page 1034.

MASSACHUSETTS GENERAL HOSPITAL

A Clinical Meeting of the Staff of the Massachusetts General Hospital will be held in the Moseley Memorial Building, on Thursday, May 10, 1934, at 8 15 P M

PROGRAM

1 Certain Aspects of Lung Abscess Based on a Study of Two Hundred and Ten Cases—Dr Frederick T Lord and Dr Donald S King

2 Benign Tumors of the Bronchus—Dr Donald S King

3 Lobectomy and Total Pneumonectomy — Dr Edward D Churchill

Physicians, medical students, nurses and social workers are cordially invited.

COMMITTEE ON HOSPITAL MEETINGS

ESSEX NORTH DISTRICT MEDICAL SOCIETY

The Ninety Third Annual Meeting of the Essex North District Medical Society will be held at the Andover Country Club on Wednesday, May 9, at 12 30 P M, at which time there will be a dinner followed by the business meeting At 2 00, Dr L M Hurxthal will give a motion picture demonstration of synchronized heart action, and electrocardiograms At 2 30, Dr L E Phaneuf will address the meeting on "Office Gynecological Methods" At 3 00, Dr John Sproull will speak on "A General Practitioner Looks at Coronary Thrombosis and Angina Pectoris"

There will be an opportunity for the members to play golf

E S BAGWELL, M D, *Secretary*

HARVARD MEDICAL SOCIETY

The next meeting of the Harvard Medical Society will be held in the Peter Bent Brigham Hospital Amphitheatre (Van Dyke Street entrance), Tuesday evening, May 8, at 8 15 P M

PROGRAM

Presentation of Cases

Factors Controlling the Peripheral Blood Flow in Man By Dr Norman E Freeman

Studies on the Innervation of the Blood Vessels and Their Application to Neurovascular Surgery By Dr James C White

Dr Walter B Cannon will preside

JOHN HOMANS, M D, *Secretary*

TRUDEAU SOCIETY

The next meeting of the Trudeau Society will be held at the Worcester County Sanatorium, West Boylston Mass, on May 8 at 4 P M Dr Richard H Overholt of the Lahey Clinic will speak on Thoracoplasty

MOSES J STONE, *Secretary*

SOCIETY MEETINGS, CONGRESSES
AND CONFERENCES

May 3—Faulkner Hospital Clinical Meeting will be held at 5 P M

May 3—Clover Hill Hospital will hold a medical meeting in the Reception Room of the hospital at 161 Berkeley Street, Lawrence, at 9 P M

May 7—Phi Delta Epsilon Fraternity See page 981.

May 8—Trudeau Society See notice elsewhere on this page

May 8—Harvard Medical Society See notice elsewhere on this page

May 10—Massachusetts General Hospital See notice elsewhere on this page

May 11—William Harvey Society See page 980

May 12—Harvard Medical Alumni Association See page 981

May 14, 15, 16, and 17—Thirtieth Annual Meeting of the National Tuberculosis Association For details apply to the National Tuberculosis Association, 450 Seventh Avenue New York City

May 15—South End Medical Club See page 980

May 16—New England Obstetrical and Gynecological Society will hold its spring meeting at Portland, Maine The registration of members will take place at the Maine General Hospital from 9 A M until 1 P M, and in the afternoon at the Chamber of Commerce Building 112 Free Street from 2 P M until 5 P M

FRED J LYNCH, M D
475 Commonwealth Avenue Boston

May 19—The New England Pediatric Society See page 981

May 26, 27, 28, and 29—The American Association on Mental Deficiency Details may be obtained from the Secretary Dr Groves B Smith Godfrey Illinois

June 12—American Heart Association will meet at 9 30 A M at the Cleveland Hotel, Cleveland Ohio

July 24 31—The IVth International Congress of Radiology will be held in Zurich under the presidency of Professor H R Schnitz General Secretary Dr H E Walther Gloriastrasse 14 Zurich

August 18 September 30—Medical Study Trip to Hungary See page 975

September 3 6—American Public Health Association, at Pasadena, California. Dr J D Dunshee Chairman, Local Committee on Arrangements

September 4, 5, 6—International Union Against Tuberculosis For information address the National Tuberculosis Association, 450 Seventh Avenue New York City

DISTRICT MEDICAL SOCIETIES

ESSEX NORTH DISTRICT MEDICAL SOCIETY

Thursday May 3—Censors Meeting will be held at the Hotel Bartlett, Haverhill, for the examination of candidates

May 9—See notice elsewhere on this page
E S BAGWELL, M D, *Secretary*
281 Main Street, Groveland Mass

ESSEX SOUTH DISTRICT MEDICAL SOCIETY

Thursday, May 3—Censors Meeting at Salem Hospital, 3 30 P M

Tuesday, May 8—Annual Meeting See page 981
RALPH E STONE, M D, *Secretary*
221 Cabot Street, Beverly Mass

FRANKLIN DISTRICT MEDICAL SOCIETY

The next meeting will be held on the second Tuesday of May at the Weldon Hotel, Greenfield at 11 A M

CHARLES MOLINE, M D, *Secretary*
Sunderland, Mass

HAMPDEN DISTRICT MEDICAL SOCIETY

May 3—Censors Meeting will be held at the Springfield Academy of Medicine 20 Maple Street Springfield at 4 P M

HERVEY L SMITH, M D, *Secretary-Treasurer*
219 Union Street Springfield Mass

MIDDLESEX EAST DISTRICT MEDICAL SOCIETY

May 9—See page 981

MIDDLESEX SOUTH DISTRICT MEDICAL SOCIETY

May 3—Censors Meeting will be held at the Boston Medical Library 8 Fenway Boston

NORFOLK DISTRICT MEDICAL SOCIETY

May 8—Annual Meeting See page 981

NORFOLK SOUTH DISTRICT MEDICAL SOCIETY

May 3—12 noon at Norfolk County Hospital Annual Meeting Election of Officers

N R PILLSBURY, M D, *Secretary*
Norfolk County Hospital, South Braintree Mass

SUFFOLK DISTRICT MEDICAL SOCIETY

May 3—Censors Meeting will be held at 4 o'clock at the Boston Medical Library 8 Fenway Boston

JAMES H MEANS, M D, *Vice-President*
GEORGE P REYNOLDS, M D, *Secretary*,
311 Beacon Street Boston Mass

WORCESTER DISTRICT MEDICAL SOCIETY

May 9—Annual Meeting See page 981
ERWIN C MILLER, M D, *Secretary*
27 Elm Street Worcester Mass

the majority of patients applied for treatment immediately after the injury, forty-nine in twenty-four hours, and five others two, three and seven days after injury. Two were classified as old cases, these were seen two weeks and four months respectively after injury.

tment

	Sepsis	
Dressing with or without antiseptic	7	1
Amputation—left open	1	0
Amputation—closure	12	1
Debridement	14	0
Débridement—closure	14	0
Débridement plus Carrel-Dakin treatment	5	1
Débridement plus amputation plus Carrel-Dakin	1	1
	54	4

Some of these cases are really traumatic amputations but frequently an attempt was made to save certain fractured phalanges with the aid of others hence the impracticability of classifying these into two groups. It will be noted that there were four septic cases in spite of the treatment given. In two cases without results we do not know about the sepsis so that there are four septic cases out of fifty-two approximately eight per cent. It is of interest to note that there were no cases of tendon sheath infection. Apparently the infection does not travel up a tendon sheath already opened up at its distal end. There were no cases of result; osteitis. Amputation of one or more phalanges was done primarily fourteen times and secondarily twice. There were no cases of gas gangrene infection or tetanus and no deaths. The average time in the hospital was two weeks. There were but four patients in this group who did not resume their former work. The amount of disability depended on the extent of the amputation required. The disability in the septic cases was no greater than in those which remained clean.

BONES OF FOREARM (43 cases)

There were forty-three cases in this series with final results in twenty-eight. All were re-

cent cases, thirty-six were treated within twenty-four hours of injury. Two delayed twenty-four hours, one, two days, two three days, one, four days, and one five days.

It was impossible to determine from the records which cases had small puncture wounds from indirect trauma and which had larger wounds produced from within out, so all of the indirect trauma cases have been classified as puncture wounds. There are twenty-five cases of puncture wounds, five cases of cuts and lacerations.

Many of the groups contain too few cases to make any deductions as to the value of the treatment. However, it is to be noted that of the sixteen cases treated by cleansing the wound and leaving it open fifteen stayed clean. These were the small puncture wounds made by splinters of bone with very little soft tissue damage. There was potential but not much actual soiling of the wound. The wound was not sutured in any of these cases. Sepsis occurred in six per cent of the cases.

The next group was made up of larger, dirtier wounds in which a debridement was done. The operator found little soft tissue damage and thought it safe to close the wound. Sepsis occurred in twenty-nine per cent of these cases.

The next group was debrided and left open with sepsis appearing in one case in four (25%). The final group was debrided and subjected to Carrel-Dakin treatment with sepsis in two out of six cases (33%). The last two groups were obviously the most severe cases.

In eight cases we find that traction was used to accomplish or maintain reduction. The majority of arms were mobilized by plaster casts, or by anterior and posterior splints of wood or plaster. Bone plates were used at secondary operation in five instances but never in a primary operation. One other secondary open operation was done. Carrel-Dakin tubes were inserted at the primary operation in eight of the cases. The tubes were left in for periods of from four days to four weeks. In but one case

TABLE III
COMPOUND FRACTURES BONES OF FOREARM

Method of Treatment	Puncture Wounds		Cuts and Lacerations		Massive Direct Trauma		Total
	Sepsis	No Sepsis	Sepsis	No Sepsis	Sepsis	No Sepsis	
Wound cleaned with or without closed reduction	1	13	0	1	0	1	16
Débridement and closure with or without reduction	0	6	2	1	2	3	14
Débridement wound left open	0	2	1	0	0	1	4
Débridement and Carrel-Dakin Closure four days before admission	0	1	0	0	2	3	6
No treatment	—	2*	—	—	1	0	1
	—	—	—	—	—	—	2
Totals	1	22	3	2	5	8	43

*Untreated because of other injuries.

ment Unless the wound is well opened up, the infected material will be forced into the wound instead of being washed out. The skin edges are excised and all traumatized and infected tissues are removed. Several knives are used in succession, as a sharp knife causes less trauma than a pair of scissors. All traumatized fat, fascia and muscle must be cut away. Normal

of compound fractures and we have rarely used steel plates. Skeletal traction may be applied distal to the wound, provided this procedure is carried out as a clean operation.

The problem of whether to close the wound and whether to use the Carrel-Dakin method now must be considered. Certain of the smaller compound wounds may be closed without drainage.

TABLE I
COMPOUND FRACTURES TREATED IN HOUSE

Region	With End Results		Without End Results		Totals
	Fresh Cases	Old Cases	Fresh Cases	Old Cases	
Phalanges and metacarpals.....	34	1	20	1	56
One or both bones of forearm or wrist.....	28	0	15	0	43
Humerus	8	3	2	2	15
Scapula	1	0	1	0	2
Phalanges and metatarsals.....	11	0	5	0	16
Tarsus	3	3	2	0	8
One or both bones of leg or ankle.....	52*	8	13	0	73
Patella	1	1	1	0	3
Femur	11	2	3	1	17
Pelvis	2	0	1	0	3
Total regions fractured.....	151	18	63	4	236
Duplicates (2 regions in same patient).....	6	—	1	—	7
Total patients	145	18	62	4	229

*One case with both legs fractured

TABLE II
TYPE OF INJURY
(Excluding Old Cases)

	Indirect Trauma		Direct Trauma		Totals
	Puncture Wounds	Extensive Damage from Within Out	Lacerations and Cuts	Massive Trauma	
Phalanges and metacarpals.....			5	49	54
One or both bones of forearm or wrist.....	25		5	13	43
Humerus	2	2	1	5	10
Scapula			1	1	2
Phalanges and metatarsals.....			2	14	16
Tarsus		3	1	1	5
One or both bones of leg or ankle.....	25	14	4	22	65
Patella				2	2
Femur	7	1	1	5	14
Pelvis	2			1	3
Totals	61	20	20	113	214

muscle may be recognized by bleeding and twitching when it is incised. Small bone fragments unattached to periosteum should be removed and the edges of soiled bone trimmed with rongeurs. Large fragments with periosteum attached to them should be thoroughly cleaned and put back. Even if they do not live, their calcium content may aid in establishing union.

A reduction of the fracture may be accomplished at this time unless it is necessary to open up new areas. We do not advocate the use of bone grafts or bone pegs in the primary fixation

If Dakin solution is to be used, the tubes must be inserted at the time of operation and the instillation of the solution started at once. Details of the Carrel-Dakin treatment are considered at the end of this paper.

PHALANGES AND METACARPALS (56 CASES)

There were fifty-four fresh compound wounds and two old wounds. All were due to external violence, usually associated with industrial occupations. Crushing between two objects or in machines, injuries in cutting machines or being struck by heavy weights were common causes

PHALANGES AND METATARSALS (16 CASES)

There were sixteen cases, eleven with final results and five without. All patients applied for immediate treatment but one, who delayed two days. The usual cause was the falling of a heavy weight (eleven cases), one was a crushing injury and in two the causal agent was a bullet or gun-shot charge.

TARSUS (8 CASES)

There were five fresh and three old compound fractures or dislocations of the tarsus in our series. Of the fresh cases, one was due to a bullet wound, two to falls, one to a railroad accident and the other was caused by a heavy weight falling on the foot.

There were no cases of tetanus or gas bacillus.

TABLE V
COMPOUND FRACTURES OF THE HUMERUS

Method of Treatment	Indirect Violence		Direct Violence		Totals
	Sepsis	No Sepsis	Sepsis	No Sepsis	
Wound cleansed with closed reduction	1			1	2
Débridement and closure		1		2	3
Débridement, wound left open				2	2
Débridement and Carrel Dakin		1	1		2
Amputation for gas bacillus infection	1				1
Totals	2	2	1	5	10

Carrel-Dakin treatment was used in two cases and in both the wounds remained clean. There were no gas bacillus or tetanus cases, no deaths and no resulting bone infection. The average hospital stay was three and one-half weeks, the longest was eleven weeks and the shortest, one week. Four patients required secondary amputations of one or more phalanges.

The immediate results are shown in table VI. The final results are known in eleven cases. Two were given a perfect rating. Five others had excellent results considering that one or more phalanges had been removed. Two patients were able to do their work and had a good functional result after the amputation of one toe. There were two poor results, one a traumatic amputation of two toes and the other due to a crushing injury of the first metatarsal and proximal phalanx.

infection and no deaths. The average hospital stay was seven weeks. The Carrel-Dakin treatment was not used in any case as a primary measure.

Treatment was as follows

Débridement and closure	1—no sepsis
Débridement and astragalectomy	2—no sepsis
Débridement and reduction	2—both septic— with secondary amputations

The final results were known in only two cases. One patient had an astragalectomy with fair function and he was able to do about three-fourths of his usual work. Another with a compound dislocation of the astragalus had about half his usual function and had to change his occupation.

TABLE VI
TREATMENT OF PHALANGES AND METATARSALS

	Cases	Sepsis	No Sepsis
Antiseptic dressings	1		1
Cleansing and suturing	2	1	1
Débridement and suturing	3		3
Débridement, open reduction—wound left open	2	1	1
Débridement, open reduction plus Carrel Dakin	2		2
Débridement and left open	3		3
Amputation toe with closure	2		2
No treatment	1	1	
Totals	16	3	13

Summary Wounds closed 7—sepsis 1
 Wounds left open 3—sepsis 1

The problem of the treatment of compound fractures of these bones is much the same as in the bones of the hand. The degree of the original injury determines the final result to a certain extent. Amputations are frequently necessary to give the best result.

BONES OF LEG (72 CASES)

There were sixty-four recent compound fractures of one or both bones of the leg and eight old cases. End results were obtained in fifty-one of the fresh cases. Fractures extending into the knee joint and fractures of the ankle,—few

was the degree of infection watched by the use of bacterial smears. In that case smears were made every day until they were negative for organisms.

There were no cases of persistent bone infection, no gas bacillus or tetanus infections and no amputations. There were two deaths, one from fracture of the pelvis occurring two hours after admission and one from sepsis. The latter patient also had a compound fracture of the humerus, and both compound wounds remained infected until his death in nine days. He had been admitted twenty-four hours after being caught in a windlass. Débridement was done and Carrel-Dakin treatment was given. The mortality in the series was two and four-tenths per cent.

The duration of the hospital treatment in forty cases (excluding a case with a fractured femur and the patient dying of a fracture of the pelvis) averaged three and one-half weeks. The longest time was thirteen weeks and the shortest time, three days.

A study of the cases shows three poor results. One patient who developed sepsis had a poor anatomical result, fair function and was able to resume his work after a year. A second, who

tial closure with drainage, it should either be tightly closed or left open.

HUMERUS (15 CASES)

There were fifteen cases in this series. Of these, ten cases were due to recent injuries and five cases were from old injuries. End results were determined in eight new and three old cases. Of the ten fresh cases, eight were seen in the first twenty-four hours, one a day after injury and one four days after injury. Two were puncture wounds, two were more extensive wounds from within out, one was due to a cut, and five were due to massive direct trauma.

There was one case of gas bacillus infection in a four-day-old wound and immediate amputation was done with recovery. There was one death from sepsis in a day old compound fracture of the humerus associated with a similar wound of the forearm. There were no persistent bone infections. Table V shows the immediate results by the various methods of treatment.

The end result study showed practically a perfect result in twelve out of twenty-eight cases. Besides the death mentioned above there

TABLE IV
SUMMARY OF TREATMENT OF BONES OF FOREARM

	Sepsis	No Sepsis	Total	% Sepsis
Wound cleansed.....	1	15	16	6
Débridement	5	13	18	27
Débridement and Carrel Dakin.....	2	4	6	33
Wound closed.....	4	10	14	29
Wound left open.....	4	22	26	15

also had compound fractures of his fingers, developed sepsis and finally had very poor function of the arm and was unable to do much work. A third, who was a watchmaker, developed so much stiffness in his fingers that he could not return to full duty at his trade.

Twelve patients out of twenty-eight in whom the final results are known had practically perfect results. In eight cases there was either some deformity, some limitation of function, or change in the economic status, but the results were considered to be fair.

Comment

Our experience has been that simple cleansing of a small puncture wound in the arm with the application of iodine to the skin is a safe procedure if there is no gross contamination. The wound should be left wide open and we believe the Carrel-Dakin treatment offers additional protection. Our cases that have had a débridement and closure have shown a much higher percentage of sepsis than those left open. We do not advocate loose closure of the wound or par-

was one death in an untreated case. Eleven cases showed some deformity, five of these had some slight impairment of function but all resumed their former occupations. There were three poor results. The first was in a septic case where there was a full year of disability. He had a poor anatomical result, fair function and was able to do his usual work. The second was in a case with compound fractures of the fingers, wrist and sepsis. He was unable to resume work. The third was in the watchmaker mentioned above who also had compound fractures of the bones of the forearm.

We believe that in compound fractures of the humerus, careful débridement should be done in all cases. Sepsis may mean non-union and must be avoided.

SCAPULA (2 CASES)

There were two minor fractures of the scapula. The compound wounds healed without sepsis after the application of antiseptics. The end result was known in but one case, this patient had a good functional result.

al traction was used in twenty-nine. Steinmann pin being inserted through alais. Delayed union was noted in one h skin traction and non-union in three which skeletal traction was used. Non-occurred, therefore, in ten per cent of the uses with skeletal traction. Bone grafts none in the three cases of non-union with sults.

idary amputation was done five times. 1 attempt had been made to save the limb eat the fracture. Three of these were sis, one for poor circulation, and one for ary hemorrhage in the presence of sepsis.

e degree of sepsis was noted in thirteen as follows:

ase 1 Traumatic amputation one leg frac-
b leg and femur on other side. Ampu-
ot second leg for sepsis. Death.

ase 2 Débridement with loose closure. Skel-
traction. Minor sepsis.

ase 3 Multiple fractures—b b leg, ulna,
le, pelvis. Wounds cleaned. Died of sep-
id pneumonia.

ase 4 Tibia protruding, débridement. Car-
rak treatment, skeletal traction, mild sep-
nd later sequestrectomy.

ase 5 Large, direct trauma wound debrided
left open, skeletal traction, sepsis, second-
hemorrhage and amputation.

ase 6 Fracture from within out, debride-
t, Carrel-Dakin treatment, sepsis, seques-
tomy.

ase 7 Puncture wound, hit by fire truck.
nsed and dressed, closed, amputation in ten
s for sepsis.

ase 8 Débridement, Carrel-Dakin treat-
it, skeletal traction. Amputation for sepsis
two weeks.

ase 9 Débridement, closure sepsis and se-
strectomy.

ase 10 Débridement, skeletal traction sep-

ase 11 Extensive soft tissue maceration,
assing only, extensive sepsis and later exten-
e débridement.

ase 12 Débridement, skeletal traction, sep-
; bone infection, sinus.

ase 13 Débridement with loose closure,
st, slight skin sepsis.

eaths

There were four deaths, as follows (mor-
ality 6.3 per cent):

1 Traumatic amputation one leg, secondary
mputation other leg for fractures and sepsis.

2 Multiple fractures. Sepsis and pneumonia.

3 Fractured skull (four days).

4 Uremia following multiple fractures
(twelve days).

The average hospital stay (excluding the

deaths) was ten weeks. The shortest time was
two and a half weeks and the longest (includ-
ing three admissions) was twenty-eight weeks.

Results

1 Puncture Wounds (20 cases)

11 cases—practically perfect in every
way.

5 cases—economically the result was
perfect. Slight deformity and
slight disability.

1 case—slight deformity, slight dis-
ability functionally, slightly lim-
ited at old job.

1 case—amputation for sepsis.

1 case—death from sepsis and pneu-
monia.

1 case—death from other causes after
discharge.

2 Extensive fractures from within out (12 cases)

5 cases—practically perfect.

2 cases—slight deformity but other-
wise good.

1 case—delayed union. Function only
fair.

1 case—sepsis. Some deformity and
function fair.

1 case—delayed union. Considerable
deformity.

1 case—death from uremia.

1 case—death from other causes after
discharge.

3 Lacerations (3 cases)

2 cases—practically perfect.

1 case—slight deformity and slight
limitation of function.

4 Massive Direct Trauma (17 cases)

9 cases—practically perfect.

1 case—satisfactory except for slight
deformity by x ray.

2 cases—fair function slight deformi-
ty unable to do former work.

3 cases—amputations.

1 case—death from fractured skull.

1 case—death from traumatic ampu-
tation of one leg secondary ampu-
tation of other leg.

Comment

As in the fractures of the bones of the arm, our results show that the mild puncture wounds are satisfactorily treated by cleaning the wound and leaving it open after sterilizing the skin (10 per cent sepsis). It has not been our custom to close these wounds, although it was done successfully in one case.

If the wounds are larger débridement and exploration of the wound are indicated. We have closed some of these wounds which did not appear dirty and we advocate closure in selected cases. Our results showed thirty-three per cent sepsis when closure was done and nineteen per cent when left open.

In the larger wounds and those caused by direct trauma we advocate débridement and the instillation of Dakin solution according to the Carrel-Dakin technique.

Our results show too many septic cases in the

in each group—have been grouped with the fractures of the shafts in this study. This group of compound fractures is the largest and perhaps the most important of any in our series.

All but one patient applied for treatment immediately after injury. Automobiles were the cause of injury in forty-two out of sixty-four cases. It is to be noted from the following table that patients with auto injuries fall into all four groups.

Cause of Fractures

1 Puncture wound (24 cases)	
Struck by auto	15
Auto accident	2
Fall	4
Crush between trucks	1
Struck by train	1
Collision of baseball players	1
2 Extensive fractures from within out (14 cases)	
Caught foot	2
Struck by auto	6
Fall	5
Heavy weight falling	1
3 Lacerations (4 cases)	
Run over	1
Auto accident	1
Struck by auto	1
Crush	1
4 Massive direct trauma (22 cases)	
Fall	1
Caught between railroad cars	2
Crush by heavy weight	4
Run over	3
Struck by auto	7
Auto accident	5

Table VII shows the various methods of treatment with various combinations of (1) cleansing or debridement of the wound, (2) closure or not, (3) skeletal traction and (4) Carrel-Dakin treatment. The groups are too small to be of statistical value. Of twenty cases treated by simple cleansing of the wound or by the application of iodine there were but two cases of infection, but these were the mildest compound cases. Débridement with closure showed four septic cases out of twelve. Débridement with or without Carrel-Dakin treatment was done in forty-four cases with ten cases of sepsis.

However, when we consider the table from the type of fracture we find that nearly all the septic cases came in the group of massive direct violence and that these cases showed forty-seven per cent septic cases. This is a very unsatisfactory result. However, it is to be borne in mind that before the development of the debridement technique many of these limbs would have been considered beyond aid, and amputation would have been considered. The percentage of sepsis in this entire group was eighteen.

Carrel-Dakin treatment was used in twenty cases. There was one case of tetanus in an old case admitted twelve days after injury. This case is discussed later. There were no gas bacillus cases. Three patients developed bone sepsis with later removal of sequestra. One patient had a persistent sinus one year after injury.

TABLE VII
COMPOUND FRACTURES OF BONES OF LEG

Method of Treatment	Puncture Wounds		Extensive Wounds from Within Out		Lacerated Wounds		Extensive Direct Violence		Total
	Sep- sis	No Sep- sis	Sep- sis	No Sep- sis	Sep- sis	No Sep- sis	Sep- sis	No Sep- sis	
Wound cleansed with or without closed reduction	1	4	0	0	1		1	1	8
Wound cleansed—Steinmann Pin Traction	0	9			1		1		11
Wound cleansed and sutured					1				1
Débridement with closure (closed reduction)		4		1			3	1	9
Débridement with closure—Steinmann Pin Traction				1			1	1	3
Débridement with closed reduction		1		1					2
Débridement with Steinmann Pin Traction		2		2			2	3	9
Débridement and Carrel Dakin					1		2		3
Débridement and Carrel Dakin with open reduction		1		1					2
Débridement and Carrel Dakin with or without open reduction and S P Traction		3		2			2	2	15
No Treatment							1		1
Totals	1	24	2	12	0	4	10	11	64
	4% septic		14% septic		No sepsis		47% sepsis		

TABLE IX
ANESTHESIA—EXCLUDING OLD CASES

	Ether	Gas Oxygen or Ethylene	Novo- caine	Spinal	None	Total
Phalanges and metacarpals	26	6	16		6	54
One or both bones of forearm or wrist	23	3	1		11	43
Humerus	7	1	1		1	10
Scapula					2	2
Phalanges and metatarsals	10	2	2		2	16
Tarsus	3	2				5
One or both bones of leg or ankle	33	11	9	1	5	64
Patella	2					2
Femur	6	6	2			14
Pelvis			1		2	3
Totals	120	31	32	1	29	213

TABLE X
SUMMARY OF SEPSIS*

	Indirect Trauma Puncture Wounds	Trauma Extensive Within Out	Direct Trauma Lacera- tions and Cnts	Massive Trauma	Totals	Sepsis
Phalanges and metacar- pals			5 (0)	49 (4)	54 (4)	8%
One or both bones of forearm or wrist	25 (1)		5 (3)	13 (5)	43 (9)	20%
Humerus	2 (0)	2 (2)	1 (0)	5 (1)	10 (3)	30%
Scapula			1 (0)	1 (0)	2 (0)	0%
Phalanges and metatar- sals			2 (0)	14 (3)	16 (3)	18%
Tarsus		3 (1)	1 (0)	1 (1)	5 (2)	40%
One or both bones of leg or ankle	25 (1)	14 (2)	4 (0)	21 (10)	64 (12)	18%
Patella				2 (0)	2 (0)	0%
Femur	7 (2)	1 (0)	1 (0)	5 (3)	14 (5)	35%
Pelvis	2 (0)			1 (0)	3 (0)	0%
Totals	61 (4)	20 (5)	20 (3)	112 (27)	213 (35)	
Per cent septic	65	25	15	24	18	

*Number of septic cases shown in brackets

Sepsis

In table X we present a summary of the septic cases. In some of these the amount of sepsis was very mild and did not in any way complicate the result.

Sepsis According to Method of Treatment

Table XI shows the relative sepsis in the cases treated by antiseptic dressings, and débridement with closure. Those cases treated by the simplest methods, because they were the mildest cases, gave the lowest percentage of sepsis (14). The wounds that were débrided and closed were the ones that the operator thought would stay clean without drainage. They gave sixteen per cent septic results, while the cases débrided and left open showed twenty per cent septic cases.

Bone Plates

It has not been our practice to use any foreign material for the fixation of fractures which have been compounded, although many of us

believe it is a safe procedure in certain cases, provided the wound is left open and Dakinized. One case in this series was so treated. Healing occurred without sepsis.

Mortality

There were eight deaths in this series. One patient was untreated and died immediately. One died of a simple fracture of the skull, leaving six deaths as a result of compound fractures which were treated. The mortality was two and nine-tenths per cent.

Tetanus Infection

All cases in this series were given antitetanic serum. As previously stated, one patient developed tetanus on the twenty-fourth day after admission for a gunshot wound of the thigh, femur and knee joint. Because of the initial injection the disease ran a mild course and the patient recovered after receiving 180,000 units of antitetanic serum.

Another patient was admitted twelve days

extensive wounds from direct violence, the most complicated of the compound fractures

PATELLA (3 CASES)

There were three cases of compound fracture of the patella, two fresh and one old. The first was subjected to débridement and healed without sepsis with a perfect result. The second wound was debrided and the fragments sutured with kangaroo tendon. There was no sepsis but the final result is unknown.

FEMUR (17 CASES)

Fourteen fresh cases and three old cases comprise this series, a total of seventeen. End results were obtained in eleven new and one old case. One patient was admitted three days after treatment, but the others applied for treatment at once.

The cause of injury was fall, eight cases, bullet wound, two cases, automobile or truck accident, four cases. Table VIII indicates the methods of treatment and the immediate result.

There were two cases of bone infection requiring sequestrectomies. There was one case of tetanus with recovery, no cases of gas bacillus infection and one death (mortality 7 per cent). This death was due to sepsis and occurred on the fourth day. One secondary amputation was done for diabetic gangrene of the injured leg.

Case 5 Sepsis after open operation. Amputation for diabetic gangrene.

Results

There were two of the eleven cases seen at the end of one year in whom the result was practically perfect. There was one death. All of the others were rated as having but fair function, anatomical result or economic efficiency, being deficient in one or more of these groups. All patients were able to continue their old occupations.

Comment

Compound fractures of the femur are so serious that we feel that radical treatment is the safest. In our series of five cases treated by cleansing and applying antiseptics we were lucky enough to have three wounds stay clean. We believe that these wounds should all have been treated by débridement and all left open. All wounds of any size should receive Carrel Dakin treatment as well.

PELVIS (3 CASES)

There were three cases in this group. The first case showed a puncture wound of the ilium, associated with a dislocation of the shoulder. The wound was treated with an antiseptic dressing with no sepsis and with an excellent result.

TABLE VIII
COMPOUND FRACTURES FEMUR

	Puncture		Within Out		Lacerations and Cuts		Extensive External Violence		Total
	Sep sis	No Sep sis	Sep sis	No Sep sis	Sep sis	No Sep sis	Sep sis	No Sep sis	
Wound cleansed, Skeletal Traction	2	3							5
Débridement, Skeletal Traction		2							2
Débridement and Carrel Dakin					1		1		2
Débridement and Carrel Dakin and Skin Traction								1	1
Débridement and Carrel Dakin and Skeletal Traction				1			2	1	4
Totals	2	5	0	1	0	1	3	2	14

Excluding the patient who died, the patients spent four months on an average in the hospital. The longest time was eight months and the shortest three and one-half weeks.

Sepsis occurred in five cases (45 per cent). The cases are cited briefly.

Case 1 Puncture wound, treated elsewhere for three days. Dressing only at Massachusetts General Hospital. Sepsis.

Case 2 Fire engine crash, death in four days from sepsis.

Case 3 Bullet wound, sepsis.

Case 4 Gunshot wound, phlebitis, sepsis, tetanus. Recovery.

The second case was one of massive external violence, associated with a compound fracture of both bones of the leg. The wound was débrided and there was no sepsis. The patient died of uremia, not associated with the fracture.

The third patient had a puncture wound which was treated with an antiseptic dressing without sepsis or complications.

GENERAL CONSIDERATIONS

Anesthesia

The type of anesthetic used is summarized in table IX. Ether seemed to be the favorite.

TABLE IX
ANESTHESIA—EXCLUDING OLD CASES

	Ether	Gas Oxygen or Ethylene	Novo- caine	Spinal	None	Total
Phalanges and metacarpals	26	6	16		6	54
One or both bones of forearm or wrist	28	3	1		11	43
Humerus	7	1	1		1	10
Scapula					2	2
Phalanges and metatarsals	10	2	2		2	16
Tarsus	3	2				5
One or both bones of leg or ankle	38	11	9	1	5	64
Patella	2					2
Femur	6	6	2			14
Pelvis			1		2	3
Totals	120	31	32	1	29	213

TABLE X
SUMMARY OF SEPSIS*

	Indirect Puncture Wounds	Trauma Extensive Within Out	Direct Lacera- tions and Cuts	Trauma Massive Trauma	Totals	Sepsis
Phalanges and metacar- pals			5 (0)	49 (4)	54 (4)	8%
One or both bones of forearm or wrist	25 (1)		5 (3)	13 (5)	43 (9)	20%
Humerus	2 (0)	2 (2)	1 (0)	5 (1)	10 (3)	30%
Scapula			1 (0)	1 (0)	2 (0)	0%
Phalanges and metatar- sals			2 (0)	14 (3)	16 (3)	18%
Tarsus		3 (1)	1 (0)	1 (1)	5 (2)	40%
One or both bones of leg or ankle	25 (1)	14 (2)	4 (0)	21 (10)	64 (12)	18%
Patella				2 (0)	2 (0)	0%
Femur	7 (2)	1 (0)	1 (0)	5 (3)	14 (5)	35%
Pelvis	2 (0)			1 (0)	3 (0)	0%
Totals	61 (4)	20 (5)	20 (3)	112 (27)	213 (38)	
Per cent septic	65	25	15	24	18	

*Number of septic cases shown in brackets.

Sepsis

In table X we present a summary of the septic cases. In some of these the amount of sepsis was very mild and did not in any way complicate the result.

Sepsis According to Method of Treatment

Table XI shows the relative sepsis in the cases treated by antiseptic dressings, and débridement with closure. Those cases treated by the simplest methods, because they were the mildest cases, gave the lowest percentage of sepsis (14). The wounds that were débrided and closed were the ones that the operator thought would stay clean without drainage. They gave sixteen per cent septic results, while the cases débrided and left open showed twenty per cent septic cases.

Bone Plates

It has not been our practice to use any foreign material for the fixation of fractures which have been compounded, although many of us

believe it is a safe procedure in certain cases, provided the wound is left open and Dakinized. One case in this series was so treated. Healing occurred without sepsis.

Mortality

There were eight deaths in this series. One patient was untreated and died immediately. One died of a simple fracture of the skull, leaving six deaths as a result of compound fractures which were treated. The mortality was two and nine-tenths per cent.

Tetanus Infection

All cases in this series were given antitetanic serum. As previously stated, one patient developed tetanus on the twenty-fourth day after admission for a gunshot wound of the thigh, femur and knee joint. Because of the initial injection the disease ran a mild course and the patient recovered after receiving 180,000 units of antitetanic serum.

Another patient was admitted twelve days

after receiving a compound fracture of both bones of the leg. Tetanus infection was present on admission. The leg was amputated but the patient died in five days.

The incidence of tetanus in this series of two hundred and seven patients with two hundred and thirteen compound fractures was forty-eight one hundredths per cent.

Osteitis

There were five cases of persistent bone infection which was an osteitis rather than an osteomyelitis. Sequestrectomy was done in each

reserved for the most extensive injuries. For this reason it is unfair to determine the results of the treatment by the percentage of septic cases. The percentage of sepsis is higher than in the cases not so treated.

The technique of the treatment was not carried out accurately in many of these cases. In some instances Carrel-Dakin tubes were inserted in the wound at the time of operation, but the instillation of Dakin solution was not started until sepsis appeared. In other instances the tubes were not introduced into the wound until it became septic. In but one case was the degree

TABLE XI
SUMMARY OF TREATMENT AND SEPSIS

	Antiseptic Dressings	Débridement Left Open	Débridement Closed
Phalanges and metacarpals	7 (1)	20 (2)	14 (0)
Bones of forearm	16 (1)	10 (3)	14 (4)
Humerus	2 (1)	4 (1)	3 (0)
Scapula	2 (0)	—	—
Phalanges and metatarsals	3 (1)	11 (1)	3 (0)
Tarsus	—	4 (2)	1 (0)
Bones of leg	20 (2)	32 (6)	12 (4)
Patella	—	1 (0)	1 (0)
Femur	5 (2)	8 (3)	1 (0)
Pelvis	1 (0)	1 (0)	—
Totals	56 (8)	91 (18)	49 (8)
Sepsis	14%	20%	16%
Whole series	18% septic		

instance with immediate healing. Three of these were in fractures of both bones of the leg and two in femurs. One other patient in the first group had a persisting sinus at the end of one year. The incidence of osteitis in the entire series was two and nine-tenths per cent.

Gas Bacillus Infection

No case which received primary treatment for the compound wound developed gas bacillus infection. Gas bacillus prophylactic serum was not used at all in this series.

One boy of ten was admitted with gas bacillus infection four days after injury was incurred by falling from a piazza. No primary débridement was done. The fracture was reduced and put up at a right angle. In spite of an immediate rise in temperature, the apparatus was not removed for four days at which time gas infection was found. On admission to the Massachusetts General Hospital, disarticulation at the shoulder was done and the boy recovered.

There were other gas bacillus infections in the hospital during the period of this report, but they occurred in traumatic amputation cases, where no attempt was made to deal with the fracture.

Carrel-Dakin Treatment

A study of the cases treated by the Carrel-Dakin treatment shows that this treatment was

of infection checked by careful examination of bacterial smears. For this reason the treatment was frequently discontinued before the infection had cleared up. Numerous cultures were made, but these showed what organism was present and not how many organisms.

Table XII shows the results of the Carrel-Dakin treatment by groups. The largest group in which it was used was in the bones of the leg and the femur. The results were most satisfactory in the bones of the leg. Obviously, the fact that the percentage of sepsis in the Carrel-Dakin cases was higher than in those not so treated is not an argument against its use in the severe cases. Actually, many limbs were saved by its use.

The Technique of Carrel-Dakin Treatment

In this hospital we have always used Dakin solution, made up by the direct chlorination method described by Dakin. This method is practical only in a large hospital. In smaller hospitals and in a general surgical practice, we have found hypochlorite (made by the Bethlehem Laboratories) quite as satisfactory. Indeed, Sherman of Pittsburgh has always used this and he is one of the strongest advocates of the Carrel-Dakin régime.

Dakin solution and hypochlorite have properties which kill bacteria in a wound without injuring

the tissues. The primary purpose in using it then is to *sterilize* wounds. Irrigation of the discharges from the wounds is also an essential feature. The solution *dissolves pus* and sloughs, changes them to chloramines which are irrigated from the wounds and on to the dressings. It has the power of *stimulating* healing and by its correct use septic wounds can be quickly changed to clean wounds, ideal for secondary suture.

Technique (as described by Carrel)

1 Small rubber tubing made of a special chlorine-resisting rubber is prepared in one foot lengths with a silk ligature about one end and

and not till then, the irrigations may be stopped. One organism will give a positive culture, hence cultures are useful only in determining the organism and not the degree of sterility.

5 Small squares of finely woven compress cloth or linen are now laid over the tubes to keep them in place, but they or gauze sponges must never be packed in the wound. Failure to observe this point will result in failure of the Dakin treatment.

6 Fluffed gauze is placed about the wound to absorb the discharges. One pad large enough to completely surround the wound and thick enough to last twenty-four hours is then held

TABLE XII
SEPSIS IN CARREL-DAKIN CASES

	Indirect Trauma	Direct Trauma
Phalanges and metacarpals	—	8 (2)
Bones of forearm	1 (0)	5 (2)
Humerus	1 (1)	1 (0)
Phalanges and metatarsals	—	2 (0)
Bones of leg	13 (2)	7 (2)
Femur	1 (0)	6 (3)
Totals	16 (3)	29 (9)
Summary		
Carrel Dakin cases	18% septic	31% septic
Whole series	11% septic	22% septic

with holes punched at one-quarter inch intervals on four sides for a distance of one or two inches from the end.

2 At the time of operation these tubes are placed in the wound in sufficient quantity to allow thorough irrigation. All the holes in the tube should be in the wound or in case of a surface wound requiring irrigation as well none of the holes in the wound. The tubes are lined up sewed to the skin and fastened by adhesive plaster. The tubes should be so placed that puddles are formed in the wounds. At each irrigation the new solution goes to the bottom of the puddle and forces out accumulated debris. The wound is left as widely open as possible.

3 The skin for a considerable distance around the wound is covered by boric ointment compresses made by saturating a fine mesh gauze with ointment. Autoclaving makes the distribution homogeneous throughout the gauze.

4 Cultures and smears are taken with platinum loops from the wound at operation. Smears are then taken every two or three days and stained with methylene blue. The average number of bacteria seen in five high power fields is noted. In the usual septic case the number is more than fifty at first and is noted as "infinity." During the next few days the number will be reduced to perhaps fifteen or ten. When no more than one organism is seen in five fields, the wound is considered sterile. Then,

in place by a towel or swathe the latter being pinned rather than bandaged.

7 The best technique calls for a dark colored solution bottle holding 800 to 1000 cc attached to the bed. This bottle is connected by rubber tubing and glass connecting tubes to each of the smaller tubes in the wound. Every two hours a clamp on the tube is released allowing a measured amount of the solution to flow into the wound. If the bottle is at the proper height and if the skin is properly protected this solution may be given day or night without awakening the patient. However, in this hospital it is impossible to get internes to use the gravity apparatus. Instead they clamp each tube as it emerges from the dressing and cover it with a sterile sponge. Each of the tubes is then filled separately. This is a serious break in an aseptic technique.

8 Five to fifteen cubic centimeters of the solution is given per tube every two hours. Dakin has demonstrated that bacteria will grow in solution more than two hours old. Frequently we have found patients having the instillations regularly during the day but only once or twice at night, and of course these patients have not done well. The first irrigation should be given before the patient leaves the operating room and not wait until the next day.

9 All parts of the dressing except the tubes must be changed daily. Each tube should be flushed out with a syringe. The skin should

be cleansed with neutral soap solution, which in turn should be washed off with salt solution. Irritation of the skin may be relieved by zinc oxide ointment. We see no merit in the use of hydrogen peroxide to cleanse the skin.

10 All material to be used in carrying out this technique and no others should be at the bedside on a cart. Strict asepsis must be used and all material and dressings handled by instruments.

11 A potentially septic wound should be sterile in three or four days. A frankly septic wound should be sterile and ready for a secondary suture or dry dressings in eight to ten days.

12 For large surface wounds it has been found helpful to cover the tubes individually with small pieces of Turkish toweling. This keeps the tubes from moving during the installation. It keeps the débris from filling the holes in the tubing but it does not interfere with the installation of the solution. In other cases it is helpful to use a tube attached at both ends to a Y tube with the holes punched in the central part of the tubing.

SUMMARY

1 This series comprises two hundred and thirty-six compound fractures and dislocations occurring in two hundred and twenty-nine patients. Of these, twenty-two were fractures one week or more old. The end results have been studied in one hundred and sixty-three cases.

2 The method of débridement in use at this hospital and the technique of Carrel-Dakin treatment have been described.

3 A study has been made of the amount of sepsis, disability and permanent deformity developing after treatment of compound fractures by various methods.

4 The incidence of tetanus in the series was 0.48 per cent, of gas bacillus infection none, of persistent bone infection 2.9 per cent.

5 Sepsis followed treatment in 18 per cent of the cases. In the mild puncture wounds this was 65 per cent, while in the cases caused by direct trauma it was 24 per cent.

CONCLUSIONS

1 If treated early and adequately, the average compound fracture caused by indirect trauma is no more serious than a simple fracture. If sepsis develops, the period of disability is prolonged and the end result is not so good.

2 Our results obtained by cleansing the small puncture wound, applying an antiseptic solution and leaving the wound to granulate have been for the most part satisfactory.

3 Compound fractures from direct trauma are far more serious and call for very radical measures. Thorough débridement of a compound wound with adequate irrigation usually prevents the development of sepsis. We believe that some of the smaller wounds may be tightly closed after débridement but that the larger ones

should be left wide open. We do not advocate loose closure or partial closure with drainage.

4 The Carrel-Dakin treatment is a satisfactory method of treating a septic compound wound or in preventing sepsis in a potentially septic wound if the treatment is carried out according to the original published technique.

5 Débridement prevents the development of gas bacillus infection. Gas bacillus serum is not needed as a prophylactic agent.

6 A prophylactic dose of antitetanic serum will usually prevent tetanus, or if tetanus develops, will reduce the severity of the disease.

7 Débridement of the bone ends will usually prevent the death of bone and the resulting formation of sequestra.

8 Our results of treatment by the present methods are quite satisfactory with the exception of the femurs and the bones of the leg. There was too much sepsis in these groups. Radical measures should be used in a larger number of these cases.

DISCUSSION

DR. PHILIP WILSON, Boston, Mass. I have been much interested by Dr. Daland's paper. He has made a thorough study of a large group of cases and a good deal can be learned from it. In considering the results, however, it is important to bear in mind that the patients have been treated by a number of surgeons of varying experience and skill, and that in consequence techniques have differed, and the results from different methods of treatment have not been uniform.

In treating compound fractures several questions arise that require nice judgment. First is the time interval between injury and treatment. When the patients reach the hospital soon after injury we know there is a very reasonable chance of being able to mechanically disinfect the wound by the operation of débridement. What is the time interval before this method becomes impractical and what should we do when the patients reach us in the doubtful period? When they are brought in within the first ten hours I believe there is a reasonable chance of success from débridement. After ten hours the surgeon should decide upon one of two courses, either assume that the wound is clean and protect it with proper dressings, or open it widely on the theory that it is already infected and that the bacteria are too widely disseminated to be influenced by débridement.

A second question demanding good judgment arises in connection with the treatment of the cases with small puncture wounds. We have proceeded on the basis of leaving alone those in which the opening was so small that we didn't believe the end of the bone could actually have protruded, where it simply came to the skin, made an opening, and with drew again. Where the wound was large enough to have permitted the bone to come out we have performed débridement.

You will notice that in Doctor Daland's series there were no instances where the Orr method of treatment was employed. This is partly due to the fact that the study covered the period from 1923 to 1929 before there was much discussion of this method, and also because we have not been very enthusiastic about this method. Perhaps we shall become so in the course of time. Then too, there were very few cases in this group in which immediate plating was done. I think we are now find

ing this a very useful method in certain types of compound fractures. One can perform a débridement, apply a steel bone plate, leave the wound open and splint the fracture, and the presence of the plate has no influence upon the development of infection, nor does it interfere with healing. The plate maintains the reduction and granulation tissue may grow out and cover it, or if not the plate may be removed when consolidation becomes sufficiently advanced.

Finally a word of warning must be said against the injudicious removal of loose bone fragments. I shall always remember a woman with a compound fracture of both bones of the leg who was treated by a young surgeon and a débridement performed. When I first saw this patient there was a considerable gap between the fragments of the tibia with loss of bone substance. The surgeon said that a bone fragment was loose devoid of blood supply, and there was nothing to do but remove it. The patient made a good recovery and never developed any infection; the wound healed by granulation, but there was no union for three years. Three bone grafting operations were performed before success was obtained in bridging the gap and obtaining union. The lesson is obvious. It would have been far better to have retained the loose fragment to serve as a scaffolding for new bone formation even at the cost of a localized infection. We could have dealt with such an infection far more successfully than we did with the final pseudarthrosis.

DR. FREDERIC JAY CORTON, Boston, Mass. I should like to add a word to that. It seems to me that we are getting around to a point where we begin to know something about handling the compound fractures and the results have been getting a good deal better in recent years, but I stepped down here to focus on one thing. It seems to me the results in fractures by direct violence of both bones of the lower leg present the field in which we should work, and I think the results so far are pretty bad, not only in this series but in general, and in general they are a great deal worse than they are at the Massachusetts General Hospital.

It seems pretty clear not only from what Dr. Daland said today but from what we have heard for several years past that the débridement and leaving open of the case doesn't work very well. Dakin's treatment, yes, as it is carried on in Pennsylvania but in all these cases that I know, except the Massachusetts General Hospital, it is rather sketchy and inadequate. Dakin's treatment has to be perfect or it is worthless.

I want to put in a plea for the attempt to close in these cases. In the first place a great many of these cases have ragged wounds and the reason they are not closed is that the wound won't come together. May I say a word in favor of doing plastics to bring them together? You can take a long slash up one or both sides of the wound quite away from the wound and bring the edges together closing tightly enough so that there is no air exposure.

In default of the ability to close it seems to me the Dakin treatment hasn't justified itself very well and I wonder if we are not coming over to protection with grease which is nothing radical, simply protecting the surface and giving a chance for cicatrization under a vaseline layer protecting from air-drying and infection, and unnecessary pockets which will breed infection. This is along a line which we have not done enough of in this country.

We should be able to get better results in the particular cases of lower leg fractures and those are the ones in which we get our calamities.

DR. PIERCE H. LEAVITT, Brockton, Mass. It appeared to me when Dr. Daland was reading the paper, that he was reporting cases from a large hospital where possibly most of the work was done by the house doctors. I think it would be interesting if a series of private cases of the regular visiting staff could be recorded as a method of comparison. Possibly there may not be enough to compare with this series but cases could be collected from members of the staff looking after their own compound fractures and probably giving a little more careful attention than would be possible by a house doctor.

DR. PIER P. JOHNSON, Beverly, Mass. I should like to say a word in connection with what Dr. Wilson said about bone fragment removal. He has touched on an important point, the tendency to remove too many bone fragments and I should like to mention a case I saw some years ago of a boy about nine years old who was run into by an automobile. He had compound fracture of both bones of the leg, the skin wound extending from just below the tibial tubercle to the ankle, and the middle third of his leg was entirely broken into three fragments, completely detached and loose outside of the wound.

It was a question of either amputation or replacing those fragments. I washed them off with salt solution and tied them together in bundles and replaced them between the ends of the bones. It took me about two years to get the final end result and I got a result which was perfect. Although he finally ejected most of the fragments there was reformation of bone without shortening. It was a striking example of what nature will do if you give it a chance.

DR. W. J. MIXTER, Boston, Mass. This is a little far from my particular line but I think that the question of the value of a bone fragment is of distinct interest.

There was one patient I operated on a good many years ago for pituitary tumor. He was operated on by the older technique in which the whole supra-orbital ridge and part of the frontal bone was taken out, with the idea of replacing it afterwards. It was taken out and placed on the table wrapped up in a sterile sponge. At the end of the operation the supra-orbital ridge was found to have been thrown in the bucket by the nurse. It was rather an appalling situation and I was a bit stuck, however, we boiled it up in the instrument boiler for two minutes and put it back. He had no sepsis whatever and the balled bone united perfectly well. This is simply an illustration of what bone will do even when it is badly insulted.

DR. ERNEST M. DALAND. I let the figures 47 per cent sepsis in the bones of the lower leg go without much defense. In my paper I have gone into much more detail as to actual cases and I think you will find results aren't quite so bad as they look because as I say one drop of pus in a stitch-hole has been classified as a septic case even though the result may have been perfect. Some of those cases obviously should have been amputated but a too enthusiastic house officer or visiting man Dakinized them and attempted to get away with it, but it was attempting too much in some cases.

Speaking of plating the fractures there was but one case in the entire series that had a plate in a compound wound and that patient did perfectly well. We have had a number of cases during the last two years not included in the series.

LEUKOPLAKIA BUCCALIS AND KERATOSIS LABIALIS*

BY SOMERS H. STURGIS, M.D.,† AND CHARLES C. LUND, M.D.†

ETIOLOGY

ALMOST twenty years ago Levy¹ wrote that "the interest in the study of leukoplakia lies in the fact that the essentials leading to a practical understanding of the subject have been for many years, and still are, unsettled." Schwimmer²² in 1877 was the first to describe the condition under its present name. During the first decade of the twentieth century the French writers Dancier, Gaucher, Bonnett, Montpelier and others concentrated their attention on syphilis as the principal cause. Although the latter two doubted the exclusive etiological rôle of a specific infection, most French authors agreed with Landouzy² that "the important, determining factor is syphilis,—for syphilis, if carefully searched for, can be verified in the majority of leukoplakias." Kyle³ of Vienna believed that ninety per cent of patients with leukoplakia would be found to have syphilis. However, the prevalence of the descriptive term "smoker's patch" before 1900 shows that tobacco was also recognized as an important contributing factor, and Bettman⁷ stated in 1932 "I have never seen leukoplakia in a patient who has not used tobacco."

Other etiological factors of possible importance have appeared in recent years in the literature. In 1927, Fitzwilliams⁸ reported the first case of leukoplakia of the tongue caused by an electric current, and mentioned the galvanic action of adjacent dissimilar metal fillings in the teeth as a possible cause in other cases. Beecher⁹ in 1928 raised the interesting question of the rôle of food allergy by reporting two cases with chronic leukoplakia who were cured by the removal of certain articles from their diet to which these patients were found sensitive. Others have claimed that hyperacidity of the saliva might constitute an irritating factor of importance over a long period of time. Although no report on the pH of saliva of patients with leukoplakia has appeared in the literature, Sharp¹⁰ nevertheless showed in a series of cases with non-ulcerated malignant lesions of the mouth no variation from the normal salivary pH. It is reasonable to conclude that if this is true of these malignant lesions, it is probably equally true of so called premalignant lesions of the buccal mucosa. King and Hamilton¹¹, publishing observations on eighty cases in 1931, called attention to the fact that, like some other

diseases, leukoplakia seemed to progress faster in diabetic patients. Bloodgood^{4, 5, 6} repeatedly stressed the rôle both of jagged, rough teeth and of chronic infection in dirty mouths, concluding that the irritation from these causes together with that from tobacco explained the etiology of the disease. Concerning bacterial action alone, as in chronic gingivitis or Vincent's infection, James¹³ is quoted by Fox¹⁴ as saying "I have found no other cause than dental infection" for leukoplakia. In this connection, Hollander et al.¹⁵ remark that leukoplakia is also found in the esophagus, vagina, kidney pelvis and bladder mucosa which can hardly be attributed to tobacco, galvanic currents, rough teeth, etc., and in these cases—when the absence of syphilis is proved—the irritation of the mucous membrane from low-grade sepsis alone appears to be the cause. Lain¹² emphasized the importance of mechanical irritation from ill-fitting dentures as an etiological factor, and showed also that the presence of mercury sulphide and sulphur in overcolored or undercured Vulcanite dental plates may cause chemical irritation of the mucosa. He further pointed out that improperly vulcanized plates may be of sufficient porosity to allow a deposit of food particles which then become a chronic source of bacterial fermentation. The work of McCarrison and Guerin (both quoted by Orr¹⁶), tends to show that epithelial tissue responds characteristically with keratinization, round cell infiltration, etc., to a deficiency of vitamin A. Orr, reporting oral cancer cases among the Indian betel-nut chewers, correlates the low vitamin diet of the Travancore coolies with the high per cent of oral cancer confined to this district and Geschickter¹⁷ has recently suggested that the same deficiency might be the underlying factor in many cases of leukoplakia of the mouth.

Thus, in summary, the following are the more important factors that have been suggested as the sole or participating cause in production of leukoplakia of the mouth at one time or another: syphilis, tobacco, chronic infection, mechanical or chemical irritation from rough teeth, ill-fitting, or poorly made dentures, electro-galvanic currents, vitamin A lack, food allergy and hyperacidity. The essentials leading to an understanding of this disease would appear to be as unsettled as when Levy wrote his article in 1915.

Concerning the etiology of cancer, however, both Lund¹⁸ and Warren and Gates¹⁹ have presented evidence of a systemic factor in this disease. Although they all concede the importance in many cases of a local, irritating factor, they have recently proved that there may also

*From the Cancer Commission of Harvard University. This work was made possible by grants from anonymous donors and from the Delamar Mobile Research Fund.

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be "a predisposition or susceptibility to cancer in certain persons, or the action of some factor favoring the development of malignancy, the nature of which is unknown"¹⁸ Likewise, as suggested by Hollander¹⁹, an understanding of leukoplakia may eventually recognize the same two categories of important factors—systemic and local. The systemic factors might include (1) syphilis, (2) vitamin A lack, (3) hereditary predisposition to atrophic and degenerative change closely allied to a possible cancer susceptibility, and local factors might include (1) tobacco, (2) chronic infection, (3) bad dental status, (4) electric currents. It is certainly true that the presence of any one of these factors even in excess does not necessarily bring about the development of leukoplakia. Perhaps one of the secondary, irritative factors in the presence of one of the primary, systemic factors may explain the etiology of the disease in a majority of cases. Unfortunately, we have no method to test for vitamin A lack or for cancer susceptibility. Persistence of the premalignant lesion in the absence of syphilis or any of the secondary local factors listed above is the best indication that we have of the presence of one of these primary, systemic causes. Such persistent leukoplakias may be looked on, as in Levy's concluding words, "as a warning" of malignant disease.

CLINICAL STUDY

For a clinical description of leukoplakia of the oral mucosa, the article on this subject by Hollander, Permar and Shonfield¹⁸ gives an excellent and detailed review of the subjective and objective symptoms, the pathology, and the differential diagnosis of this disease. The following conditions should be considered in making such a diagnosis: (1) Lichen Planus, (2) Syphilis—both the mucous patches of the secondary form and the sclerosing glossitis of the tertiary form, (3) Aphthous Stomatitis, Thrush and Vincent's Infection, (4) Lupus Erythematosus, (4) Glossitis Migrants.

Keratosis of the lip—a closely allied condition—is a dry, crusted, superficial lesion, generally well-defined but at times with no definite border, so that adjacent areas may be so confluent as to involve the entire lip. In depth it varies from a thin milky or greasy film spreading over the lip and resembling a leukoplakia that has become dried and slightly crusted through exposure, to a thick, horny lesion elevated by the progressive heaping up of the stratum corneum to one or two millimeters. These hard inelastic lesions are apt to fissure and ulcerate and the differentiation from early epidermoid carcinoma becomes clinically difficult. Lesions on the lip are found in frequent association with keratoses on the face, neck and other exposed parts, not rarely lesions are situated at the mucocutaneous junction, but for the most part they are confined

within the vermilion border. The lower lip appears to be more frequently affected than the upper lip. In the differential diagnosis the following should be borne in mind: (1) Herpes Simplex, (2) Syphilis—the primary sore, the secondary mucous patches and the tertiary atrophic changes, (3) Lupus Vulgaris and Erythematosus and (4) Chapping and cracking of the lips following exposure to cold and associated at times with the habit of moistening the lips.

The characteristic features of keratosis of the lip are as follows: (1) appearance at or after middle life, (2) chronicity of the lesion, (3) dryness and crusting of the lesion unless cracks and ulcerations have already appeared, (4) confinement to the mucous membrane of the lips—rarely confluent with lesions over the cheeks or chin.

MATERIAL

This study is based on the records of five hundred and twenty patients who entered the Collis P. Huntington Memorial Hospital clinic between 1918-1926 with leukoplakia or keratosis of the mouth or lips. Keratosis of the lips was included as well as leukoplakia of the mouth or lips since both lesions are so frequently encountered together with the same etiological factors at work and often so confluent that differentiation becomes difficult. One hundred and forty-two of these patients entered between 1918-1921 and three hundred and seventy-eight between 1921-1926. It is probable that a number of cases seen at the clinic for oral cancer during the first three years were not carefully examined for leukoplakia since Simmons^{20, 21} finds the recorded incidence of leukoplakia in cancer cases at that time to be only fourteen per cent, whereas in the next three years, 1921-1923, when a more thorough examination of the buccal mucosa was instituted, he finds the incidence in a similar group of cases to be twenty-five per cent. The records were first codified and recorded on punch cards according to a system outlined by Lund²⁰ in a previous report. The

TABLE I
DEVELOPMENT OF CANCER

I.	Cancer before or at entry	222
	A. One cancer only	210
	B. Two cancers, one after entry	12
II.	No cancer before entry	298
	A. No cancer to end of observation	261
	B. Cancer after entry	37
		520

cards were then divided into groups relative to the development of cancer (see table I). Of these five hundred and twenty cases, two hundred and twenty-two had evidence of cancer be-

fore, or at the time of admittance. Two hundred and ninety-eight patients entered the clinic with no evidence of cancer on or before entry, two hundred and sixty-one or eighty-eight per cent of these did not develop cancer, while thirty-seven or twelve per cent did develop malignancy during the period of observation.

INCIDENCE OF CANCER

The incidence of cancer in leukoplakia of the mouth was said by Mantilla (quoted¹⁴) to be about thirty-two per cent in a total of five hundred and sixty-six cases collected from the literature up to 1901. King and Hamilton¹¹ report six per cent in their series of eighty cases, but include another thirty-two per cent in a group of "definitely precancerous lesions." In the present study twelve per cent of the group of two hundred and ninety-eight patients who had no malignancy before or at entry later developed cancer. This incidence does not necessarily prove that leukoplakia and keratosis are premalignant lesions. To prove the latter, it is necessary to know the incidence of cancer in a group of normal individuals of similar age and under observation for a similar period of time. This calculation has been made by using tables previously published by Lund¹⁹ and based on the Massachusetts Death Rates for males during the years 1920-1930. It is possible to determine by these tables the numbers of deaths from intercurrent disease, from intercurrent cancer, and from intercurrent buccal cancer that should occur on the basis of chance alone.

In table II are grouped the forty-nine cases in the present series that developed cancer after entry according to location of the cancer. Twelve cases developed double malignancy, the first of which occurred before entry to the clinic. These were disregarded in making the calculations. The details of the remaining thirty-seven cases are given in tables XIV, XV, XVI, XVII and XVIII which may be found at the end of this report.

TABLE II

DISTRIBUTION OF CANCER AFTER ENTRY—49 CASES

I	Two cancers, one before entry		12
II	Cancer after entry only		37
		Cases	Cancer Deaths
	One buccal cancer (see table XIV)	21	10
	Two buccal cancers (see table XV)	4	2
	Skin cancer only (see table XVI)	3	0
	One non buccal cancer (see table XVII)	7	7
	Two cancers, one non buccal (see table XVIII)	2	1

In table III the deaths calculated from the death rates for a control group are contrasted with the deaths in the series of cases under study. It is seen that fifty-three deaths from intercurrent disease other than cancer may be

TABLE III
LEUKOPLAKIA AND KERATOSIS
Expectancy of Cancer in 298 Cases

	Non Cancer Deaths	Buccal Cancer Cases	Deaths	Other Cancer Cases	Deaths
Calculated	53		1		9
Actual	59	25	12	12	8

predicted in a group of two hundred and ninety-eight normal individuals in circumstances similar to those of the two hundred and ninety-eight patients studied. Actually there were fifty-nine non-cancer deaths. By calculation, there should have been one buccal cancer death and nine deaths from cancer in other organs. Actually, there were twelve buccal and eight other cancer deaths in the group of cases under study.

The methods of calculation used here are not absolutely accurate. In every step, however, a conservative position was taken, so that the resulting ratios probably underestimate rather than overestimate the difference between the calculated and the actual development of cancer. Nevertheless, the above figures clearly demonstrate that patients with leukoplakia or keratosis of the mouth or lip develop buccal cancer at least twelve times more frequently than chance alone would predict. The term "pre-malignant" may justifiably be used, therefore, to describe these conditions. In this series, however, patients with these premalignant lesions appear to run no greater risk of cancer in some other organ than individuals without such lesions.

The total series of five hundred and twenty cases was analyzed to determine the significance of age and sex, and of the three more important etiological factors—tobacco, teeth and syphilis. The end-results of treatment in the two hundred and ninety-eight cases that showed no evidence of cancer at or before entry were then studied in relation to location, duration and extent of the premalignant lesion.

AGE

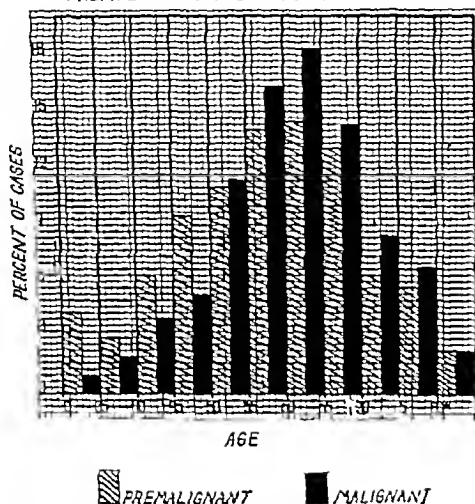
Leukoplakia and keratosis are diseases of late middle life, with thirty per cent of the cases in this series coming between fifty-five and sixty-five, and the average age being fifty-seven and one-half years. Chart I shows graphically the age of the five hundred and twenty cases divided into five year columns and recorded by per cent. In this chart, a series of eleven hundred and thirty-one patients entering the hospital with cancer of the mouth are similarly divided for

comparison The curves of the two groups are closely parallel, with the premalignant cases showing a little more tendency to fall in the younger age divisions The average age of the malignant patients was sixty and seven-tenths years

SEX

Ninety-one per cent of the patients were males Other authors^{11, 14} confirm the preponderance of men with leukoplakia of the mouth A similar proportion of patients with cancer of

CHART 1

COMPARISON OF AGES IN
PREMALIGNANT AND MALIGNANT SERIES

the mouth are found to be males In his interesting comparison of cancer of the mouth in the two sexes, Taylor²¹ emphasizes the etiological importance of tobacco, teeth and syphilis in relation to the incidence of these factors in each sex Disregarding cigarette smoking as probably innocuous to the buccal mucosa, and referring to cigars pipes and the chewing habit only, "the almost universal use of tobacco among men" he says "may account in large measure for the greater incidence of cancer of the mouth in men than in women" Although bad teeth are a conspicuous etiological factor for both sexes, "men cling to bad teeth longer than women, while the latter provide themselves much more often with dental plates after earlier extraction" In conclusion, Taylor finds syphilis to be a less conspicuous etiological factor in the female group than in the male group of lingual cancer cases

Similar statements concerning the different incidence in men and women of the tobacco habit, bad teeth and syphilis, probably pertain to premalignant disease of the mouth, and explain why, in the present series of five hundred and twenty cases four hundred and seventy-three were men

TOBACCO

Almost all authors agree in finding the use of tobacco in from eighty to ninety-five per cent of their patients Of the four hundred and twenty-one reports on tobacco in the records of the group under study, ninety-four per cent used tobacco in some form (table IV) Concerning

TABLE IV

	Tobacco		No Tobacco	
	Cases	Per Cent	Cases	Per Cent
Leukoplakia	244	96	10	4
Keratoses	150	90	17	10
	394	94	27	6

the type of tobacco used there were only one hundred and ninety-five records that contained sufficient data for tabulation The use of cigars or cigarettes and the habit of snuff-chewing are recorded so infrequently that they have been disregarded In the remaining cases, it is interesting (see table V) that among the leukoplakias

TABLE V

TYPE OF TOBACCO IN USE—195 CASES

	Pipe	Chewing Tobacco
Leukoplakia	12%	36%
Keratoses	31%	19%

the ratio of pipe to chewing tobacco in use is one to three while among the keratoses this ratio is almost reversed

This tends to confirm Taylor's statistics which show a localization of the buccal lesion in relation to those areas of mucous membrane most constantly exposed to the irritation of tobacco Keratotic lesions, confined to the lips in these cases, were associated with pipe-smoking almost twice as often as with tobacco chewing Leukoplakias, however, only twenty per cent of which were located on the lips were found associated with tobacco-chewing three times as often as with pipe-smoking

TEETH AND DENTURES

As a corollary to the statement that tobacco, bad teeth and syphilis are the three most important etiological factors, it may be added that leukoplakia and keratosis are diseases of the poorer classes Perhaps the most conspicuous class difference will be found in the care of the teeth Bloodgood⁴, Hazen and Eichenlaub²² and many others have emphasized the importance of such care In an analysis of the dental status of the cases under study, it may be assumed "that edentulous patients had periods of more or less protracted caries and pyorrhea before submitting to total extraction,"²¹ and such cases may be included with the group showing bad teeth at entry, for they have already under-

gone long exposure to dental trauma and infection. Concerning plates and dentures, these must fit accurately in order not to irritate the mucous membrane, frequent adjustment is therefore necessary. They must be of non-irritating material, Lain¹² has shown the results of cheap or poorly made dentures. They must also be kept clean. Frequent adjustment and plates made of high-grade material are not generally within the means of the clinic patient, cleanliness is often at a premium. It is not unreasonable, therefore, to include those cases that had plates or bridge-work on entry as well as their premalignant lesion of the oral mucosa, among the group having "bad dental status."

In this series, there were two hundred and fifty reports on the condition of the teeth. These have been summed up in table VI. Since there is a record of the dental condition of only one-half of the total of five hundred and twenty cases, and since it is probable that clean mouths were not recorded so often as dirty mouths,

TABLE VI
DENTAL STATUS IN 250 CASES

		Leukoplakia		Keratosis	
		Cases	Per Cent	Cases	Per Cent
Bad	No teeth	61	30	6	14
	Bad teeth	83	40	26	60
	Plates or bridge work	48	22	6	14
	Total	192	92%	38	88%
Good		15	7	5	11

the percentage given above for those with bad dental condition is undoubtedly high, especially is this true of keratosis of the lip. However, at least sixty per cent of the total number of patients with leukoplakia—one hundred and ninety-two out of a total of three hundred and twelve—may be assumed to have suffered from bad dental hygiene.

Solomon and Reinhard²⁴, working at the New York State Institute for Malignant Disease, Buffalo, N. Y., have recently reviewed the literature on galvanic currents produced by dissimilar metals used in fillings, plates and other bridge-work. The work of Palmer in 1876, and of Chase and Grant (all quoted by ²⁴) shows that the soft tissue response to these currents was being carefully considered at the time when the study of leukoplakia was just beginning. Indeed, the latter wrote that "there are many who carry (amalgam fillings) with impunity because of their lack of susceptibility, and no man can tell before trial who can and who cannot bear them." Recently Ewing²⁷ has recognized the soft tissue irritation "from electrical discharges from dental plates" as a possible factor, with other oral irritation, in the etiology of cancer in the mouth, and in the

work of Fitzwilliams⁸, Fraser²⁵, Ullmann²⁶, and Hollander¹⁵ there is presented further evidence of the presence of such a current wherever even minute quantities of dissimilar metals are used in the mouth. This current is not found in mouths in which only fillings of the same electrical potential are used. In three hundred consecutive cases of dissimilar metallic dentures, Lain²⁸ has reported leukoplakia adjacent to the dentures in twenty-one per cent, and "either subjective or objective electrogalvanic phenomena" in seventy-one per cent. Solomon and Reinhard conclude, however, "Observation shows that most mouths apparently tolerate such action without ill effect. In practical interpretation of the relationship of galvanic action to production of oral lesions, we must stress the scarcity of objective and subjective symptoms in view of the large number of restorations present in most mouths." No work was done on such galvanic action in this clinic during the years 1918-1926 which include the cases herein reported.

SYPHILIS

In the literature on leukoplakia the apparent tendency has been to view as of less and less importance the etiological significance of syphilis. Thus Fourmer (quoted by Bettman¹) had reported eighty per cent luetics among three hundred and twenty-five cases with leukoplakia, Max Joseph (same) found thirty-five per cent in one hundred cases. In 1922, Hazen and Eichenlaub²² excluded syphilis in all but thirty per cent of their patients, and King and Hamilton²¹, reporting eighty cases of leukoplakia in 1931, found but ten per cent syphilitic and concluded that it played "a minor rôle, in that all of this group had bad teeth and smoked excessively." Elliott and Stookey³, however, considered "the presence or absence of leukoplakia involving the entire mucous membrane" a valuable piece of evidence in the diagnosis of neurosyphilis. They found but one normal buccal mucosa in fifty neurosyphilitics.

In this series, there were sixty patients in whom a positive Wassermann reaction or definite past history of infection made the diagnosis certain. Fifty-five or seventeen per cent of the leukoplakias, and five or two per cent of the keratoses. Wassermann reactions, however, were done at this time only on the suspicious cases in this clinic—two hundred and forty-two of them, thus out of two hundred and forty-two tested cases, the leukoplakia patients show twenty-seven per cent positive reactions and the keratoses thirteen per cent. It may properly be concluded that syphilis is of minor importance in the etiology of keratosis of the lip. The true per cent for leukoplakias irrespective of location, probably lies between seventeen and twenty-seven per cent for this series (table VII).

our studies of syphilis in cancer of the traser²² and Lund²³ have presented evidence that syphilis was an important etiological factor in cancer of the tongue alone. Similarly, syphilis is found to be etiologically significant

TABLE VII
INCIDENCE OF SYPHILIS

	Total	Evidence Lues	Total Wasser- manns	Evidence Lues
Leukoplakia	312	55 17%	204	55 27%
Keratoses	208	5 2%	38	5 13%
Total	520	60	242	60

only in leukoplakia of the tongue—as mentioned in a report by Goodale²² in 1900. Among the leukoplakias that did not develop cancer (see table VIII), sixteen per cent of the tongue lesions showed evidence of syphilis. In the group of leukoplakia patients that did develop cancer

TABLE VIII

SYPHILIS IN CASES OF LEUKOPLAKIA THAT DID NOT DEVELOP CANCER

Location of Leukoplakia	Total Cases	Evidence of Syphilis	
		% of Total Cases	% of Tested Cases
Tongue	25	16%	24%
Rest of mouth	51	6	13
Lips	19	5	12
Whole mouth	7	0	0

at some stage of their disease (table IX), forty-eight per cent of the tongue cases had syphilis

TABLE IX

SYPHILIS IN CASES OF LEUKOPLAKIA THAT DID DEVELOP CANCER BEFORE, DURING OR AFTER ENTRY

Location of Leukoplakia	Total Cases	Evidence of Syphilis	
		% of Total Cases	% of Tested Cases
Tongue	45	48%	57%
Rest of mouth	93	5	7
Lips	43	9	13
Whole mouth	26	24	28

In this cancer group, leukoplakia lesions involving the mucous membrane of almost the whole mouth also showed a high percentage of luetics. Bloodgood⁴ has reported thirteen per cent positive Wassermann reactions in all lesions of the tongue—both benign and malignant—as compared with three per cent positives in all other lesions of mouth.

The present study confirms previous work

that syphilis plays an important rôle in the etiology of leukoplakia of the tongue, and further that it is found three times as often in those tongue lesions that developed cancer as in those that never developed cancer. It is probable that the reason for the contradictory estimates of the incidence of syphilis in the literature on leukoplakia may be due to the fact that the location of the lesion was not taken into account. There were only fifteen syphilitic patients among the cases showing no cancer at entry. All of these received specific treatment and only one later developed cancer. This does not prove, however, that antiluetic treatment given after the leukoplakia has developed is of use in the prevention of cancer in these cases. The series is too small.

END-RESULTS OF TREATMENT

For the study of end-results the material included only those cases that had no oral cancer either before or at the time of their entry, and that were kept under observation for five years or more. The two hundred and forty-eight cases that made up this group were divided into three classes as follows: (1) The cures, one hundred and fifty-eight or sixty-three per cent,—those that responded to treatment and did not recur within five years. (2) The persistent cases, sixty-five or twenty-six per cent,—those that were never relieved as well as those that responded but recurred within five years. (3) The cancer cases, twenty-five or ten per cent,—those that developed malignancy in or contiguous to their premalignant lesion during the period of observation. These cases were studied according to the location, duration and extent of the original lesion. Unfortunately the subdivisions resulting from such a study contained very small numbers of cases, far too small in many instances to be valuable from a statistical point of view. The results may serve to indicate to a certain extent, however, the relative importance of the factors under consideration.

During the years 1918-1926, a small number of cases were given no treatment other than an attempt to institute a hygienic régime, which included the cessation of all use of tobacco, extraction or smoothing down of rough teeth, the establishment and maintenance of oral cleanliness and adjustment of dentures. A majority of the cases, however, were treated on entry to the clinic with radium unless they were clinically suggestive of malignancy. On the borderline cases, an operative procedure—either electrocoagulation diathermy or surgical excision—was used alone, or followed by radiation. Other cases in which both operation and radiation were used represent surgical attempts to salvage unsatisfactory radiation results.

Table X shows end results in relation to treatment received. Forty per cent of the small group placed only on a hygienic régime were cured. The results from operation or radiation alone for both leukoplakia and keratosis were roughly comparable. The poorer results in the group requiring both operation and radiation may be ascribed to the persistence, or suggestive malignancy of these lesions rather than to the more vigorous treatment received.

In comparing end results of the leukoplakia

TABLE X
FIVE YEAR RESULTS OF TREATMENT
LEUKOPLAKIA AND KERATOSIS—248 CASES

Treatment	Total Cases	Lesion "Cured"	Per sisted	Devel oped Cancer
Hygienic Régime	20	40%	60%	0%
Operation	24	79	13	8
Radiation	182	69	24	7
Both	22	54	26	20

group with the results of the keratoses obtained by the different methods of treatment, there is a significant difference only in the group of one hundred and eighty-two patients treated with radiation. Under this treatment, seventy-five per cent of the keratotic lesions were cured, while only forty-two per cent of the leukoplakias responded without recurrence within five years.

LOCATION AND END RESULTS

The location of the premalignant lesion was studied in its bearing on the end results, irrespective of the treatment received. The fact that a syphilitic basis for leukoplakia is frequently found in tongue cases (table VI) leads one to expect that the end-results from tongue lesions

TABLE XI
FIVE YEAR RESULTS IN RELATION TO LOCATION—
248 CASES

Location	Total Cases	Lesion "Cured"	Per sisted	Devel oped Cancer
*Leukoplakia				
Tongue	28	56%	33%	10%
Mouth	25	53	34	13
Lips	52	51	32	16
Total	105	53%	33%	13%
Keratosis				
Lips	143	75%	16%	8%

*All cases with both leukoplakia and keratosis included with leukoplakia.

would be poorer than the others. That this does not appear to be so (table XI) may easily be due to the statistical inaccuracy of conclusions based on such small numbers of cases. This table shows a surprising uniformity of end-

results in relation to the location of the leukoplakia lesions.

DURATION AND END RESULTS

Leukoplakia and keratosis are typically lesions of great chronicity. Fox¹⁴, for instance, gives an average duration of eight and seven tenths years. It is difficult accurately to gauge the duration of the disease from the records because of the indefiniteness of onset of subjective symptoms. However, in order to ascertain the relation of duration of the condition before treatment in the clinic to end results, the cases have been divided into five duration periods on the face value of the patient's story, viz, (1) Under three months' duration (2) Three months to one year (3) One to two years (4) Two to five years (5) Over five years. The cases falling into each duration period have been recorded according to the per cent found in the cured group, the persistent group and the cancer group. (See table XII.) There is found no correlation between

TABLE XII
FIVE-YEAR RESULTS IN RELATION TO DURATION
BEFORE TREATMENT

LEUKOPLAKIA AND KERATOSIS—235 CASES

Duration	Total Cases	Lesion "Cured"	Per sisted	Devel oped Cancer
Under 3 mos	51	60%	21%	19%
3 12 mos	104	77	25	7
12 yrs	32	70	15	15
25 yrs	27	52	37	11
Over 5 yrs	21	67	39	4

the end results and the chronicity of the lesion before entry to the clinic, in the persistent group only there is found to be an increase in per cent of cases in the longer duration periods. Of the two hundred and thirty-five records available for this study, one hundred and eighty-seven or eighty per cent gave a story of under two years' duration from the onset of subjective or objective symptoms to the first treatment in this hospital, the average for the whole group being one and one-half years.

EXTENT OF LESION AND END-RESULTS

Extensive and diffuse leukoplakias involving a large part of the buccal mucosa as well as keratoses spread widely over one or both lips offer a difficult therapeutic problem. At the time of this study, these extensive lesions were generally given multiple applications of radium emanation, supplemented often—in the leukoplakia group—by monopolar desiccation or excision. This treatment, however, appears to have been inadequate. In table XIII, the two hundred and ten cases that contained sufficient data for tabulation have been divided by size

into three classes as follows Small, those lesions not over 0.5 cm. in diameter, medium, 0.6-2 cm., large 2.1+ cm

TABLE XIII

FIVE YEAR RESULTS IN RELATION TO SIZE OF LESION
LEUKOPLAKIA AND KERATOSIS—210 CASES

Size of Lesion	Total Cases	Lesion "Cured"	Persisted	Developed Cancer
Small, 0-0.5 cm.	65	75%	22%	2%
Medium 0.6-2 cm.	79	66	26	8
Large, 2.1+ cm.	66	49	30	14

The figures refer to the per cent of each of these size groups that was cured, persisted or developed cancer. It is seen that the highest per cent of persistent and of cancer cases is found in the "large", or more extensive group of lesions. Some authors have advised against any attempt to treat leukoplakias involving wide areas of mucosa with radiation. The figures presented in table XIII may be considered evidence in support of this view. It is probable that radiation had little influence on the end-results of the diffuse and widespread lesions. The results of both leukoplakias and keratoses over 2 cm. in diameter were equally poor.

PRESENT METHODS OF TREATMENT

In every case of leukoplakia or keratosis of the mouth or lip now entering the clinic for the first time, an effort is made first to eliminate all local factors of irritation. Emphasis is placed on the following: (1) Tobacco. Except for a moderate use of cigarettes, cessation of other forms of tobacco is strongly urged. (2) Teeth. Removal of rough and jagged stumps or of teeth worn to a sharp edge is advised, especially when such teeth are near the lesion where a number of teeth are in a condition of hopeless decay, the patient is urged to enter the hospital for a total extraction. (3) Dentures. A careful examination is made of all permanent caps, crowns and bridge-work. Sharp edges are smoothed, apparatus that is suspiciously near an irritated lesion of the mucosa is removed when possible. If plates are in use, they are temporarily discarded where there is any evidence of irritation of the soft parts. If dissimilar metals have been used in fillings or dentures, the amount of galvanic current flowing between such metals is entered in the record. A consistently high current in successive tests or one flowing between metals adjacent to the lesion, is considered a sufficient reason for substitution of one of the metals with cement or other non-conducting material, or removal of the offending denture. (4) Oral Hygiene. An attempt is made to institute a routine of oral cleanliness. If Vincent's infection is found, it is treated. Pyorrhea and gingivitis are treated with sodium perborate and milk of magnesia mouth washes.

These measures are adopted in all cases of leukoplakia and keratosis. Further treatment depends upon the location, extent and progression of the lesion. Discrete keratoses of the lip respond satisfactorily to a single application of radium emanation used in bare steel needles in this clinic, without any filtration, a dose of three to ten millicurie hours being generally sufficient. If the lesion is heavily crusted or cornified, the radium is applied at a distance of 1 cm. Diffuse, extensive keratosis covering the whole lip may be treated, when superficial, with radium emanation moved back and forth over the lip. If the lesion is thickly crusted, however, good results are obtained by the use of from two to four thousand r units of high voltage x-ray, screened with 0.12 to 0.25 millimeter of copper. If the lesion persists, or if it becomes fissured, ulcerated, or acquires an indurated base, surgical excision with a wide margin is done.

A small discrete leukoplakia, if persisting or recurrent three months after the institution of the general measures outlined in the first paragraph, is destroyed by electro-desiccation under novocain.

If the leukoplakia is extensive, and persistent or recurrent after the removal of all local irritating factors, the presence of a systemic factor is strongly suspected. (1) Syphilis. In all new cases entering the clinic a blood specimen is routinely taken for Wassermann, Hinton and Kahn reactions. When syphilis is proved by these tests, appropriate measures are instituted for its control. (2) Vitamin A lack. On the purely theoretical grounds that vitamin A lack may be causal in some cases in which the entire buccal mucosa appears to be devitalized, highly irritable and predisposed to the constant formation of leukoplakia, large doses of vitamin A are given orally for a test period of three months. The results of this treatment, however, are as yet insufficient to justify any conclusions. (3) Susceptibility to cancer. In the presence of continued persistence or recurrence of leukoplakia, the patient is regarded as a case in whom an unknown factor has predisposed the buccal mucosa to malignant development. Frequent observation of the condition becomes imperative. When the lesion becomes thickened, cracked or fissured, electrosurgical excision is promptly done. Radium and x-ray are no longer used in this clinic to treat extensive leukoplakias. Experience shows that although there may be a good response in turn to each local application of radium, yet the whole oral mucosa cannot be treated at once, and new lesions form in other locations as fast as old ones are destroyed. Poor results in these cases must be accepted, prognosis will depend upon the stage at which an early cancer is recognized and eradicated. The patient must, therefore, be impressed with the fact that the most important element in the proper treatment of his condi-

tion is his coöperation and willingness to return every three months or less for observation in the clinic

SUMMARY

A number of varied and unassociated factors are recorded as having appeared in the literature on the etiology of leukoplakia buccalis. These have been grouped into systemic and local factors. In an analysis of the incidence of cancer in five hundred and twenty cases of leukoplakia and keratosis of the mouth and lip seen at the Huntington Memorial Hospital, figures are presented that justify the contention that these are precancerous lesions. The three most important etiological factors have been analyzed in this group of cases. The bearing of location, duration and extent of the premalignant lesion on the end-result of treatment in two hundred and forty-eight selected cases has been presented with the full realization that conclusions must be guarded when based on such small numbers of cases. The present management and methods of treatment of these cases in this clinic have been briefly outlined.

CONCLUSIONS

- (1) Leukoplakia buccalis and keratosis labialis are definitely precancerous lesions
- (2) Bad dental hygiene and the use of to-

bacco are both almost universal and equally important as etiological factors in leukoplakia and keratosis of the mouth and lip

(3) Syphilis is found in about thirty per cent of patients with leukoplakia of the tongue but it is of minor importance in all other locations of this lesion

(4) In the series of cases studied, the duration of the lesion appears to have no prognostic significance. Similarly, the duration of the lesion before treatment has apparently no bearing on the results of treatment.

(5) The size and extent of the lesion definitely influence the prognosis on the type of treatment received between 1918-1926 in the clinic of the Huntington Memorial Hospital.

(6) Extensive leukoplakias involving large areas of the buccal mucous membrane do not respond well to radiation. If the lesion persists after removal of all irritating factors, the patient must be kept under constant observation and prompt electrosurgical excision should be done of any areas showing suspicious evidence of cancer.

The authors wish to acknowledge the careful and painstaking assistance of Miss Hilda M. Holm in abstracting the records, and the advice and assistance of Dr. C. C. Simmons and Dr. G. W. in preparing this paper.

TABLE XIV

NO CANCER BEFORE ENTRY—ONE BUCCAL CANCER AFTER ENTRY—21 CASES

Case No	Age	Premalignancy	Location	Time Interval	Location of Cancer	Evidence of Cancer	Time from 1st Rx. to End Result	End Result
1	68	L&K	L Lip	2 yrs	L Lip	P	8 yrs	L&W
2	45	L&K	L Lip & Mouth	2 yrs	L Lip	P	11 yrs	L&W
3	75	L&K	U Lip & Mouth	2 yrs	L Jaw	P	3 yrs	D Ca.
4	72	L	Tongue	2 yrs	Tongue	C	5 yrs	D Ca.
5	47	L	U Lip & Mouth	3 mos	U Lip	P	10 yrs	L&W
6	52	L	L Lip & Mouth	5 yrs	L Lip	P	6 yrs	D Ca.
7	64	L	L Lip & Mouth	5 yrs	L Jaw	P	5 yrs	D Ca.
8	63	L	Tongue	7 mos	Tongue	C	2 yrs	D Ca.
9	62	L	Mouth	8 yrs	Palate	P	9 yrs	D Ca.
10	58	L	Mouth	1 yr	L Jaw	P	11 yrs	L&W
11	51	K	L Lip	8 yrs	L Lip	P	9 yrs	D Heart
12	63	K	L Lip	1 yr	L Lip	P	2 yrs	D Ca.
13	57	K	L Lip	1 mo	L Lip	P	5 yrs	L&W
14	75	K	L Lip	2 yrs	L Lip	P	13 yrs	D Heart
15	42	K	L Lip	4 yrs	L Lip	P	7 yrs	L&W
16	70	K	L Lip	8 mos	L Lip	P	1 yr	D Ca.
17	75	L&K	L Lip	5 yrs	L Lip	P	10 yrs	L&W
18	49	L	L Lip & Mouth	7 yrs	Mouth	P	11 yrs	L&W
19	70	L	Mouth	?	Mouth	C	3 yrs	D Heart &
20 ¹	59	L	L Lip & Mouth	4 yrs	L Lip	P	7 yrs	L&W
21 ²	72	K	L Lip	6 yrs	L Lip	C	7 yrs	D Ca.

1 Also epidermoid carcinoma of nose. Simultaneous with lip ca.

2 One year after entry had probable ca. excised L Lip. On entry shows recurrence with neck metastases

L&K—Leukoplakia and keratosis

L Lip—Lower lip

U Lip—Upper lip

P—Pathological

C—Clinical. D—Died

L&W—Living and well

TABLE XV

NO CANCER BEFORE ENTRY—TWO BUCCAL CANCERS AFTER ENTRY—4 CASES

Ago	Promalignancy	Location	Time Interval	Location 1st	Evidence 1st	Interval 1st to 2nd	Location 2nd	Evidence 2nd	1st Rx to End Result	End Result
54	L	Mouth	6 mos	L Alveolus	P	6 mos.	L Jaw	P	6 yrs.	L&W
62	L	Mouth	4 yrs	L Lip	P	6 yrs	Cheek	P	11 yrs.	L&W
85	K	U & L Lip	1 yr	L Lip	C	1 yr	U Lip	C	4 yrs	D I&H
67	L	Tongue	6 mos.	L Tongue	P	3 yrs	Tongue	P	5 yrs	D II

TABLE XVI

NO CANCER BEFORE ENTRY—NON BUCCAL CANCER AFTER ENTRY—SKIN CANCER ONLY—3 CASES

Case No	Ago	Promalignancy	Location	Time Interval	Evidence Skin Ca	End Result
26	62	L	Tongue	6 mos	C	L&W
27	47	L	Tongue Cheek	7 yrs	C	D Subphrenic Abscess
28	69	L&K	L Lip	7 yrs.	C	L&W

TABLE XVII

NO CANCER BEFORE ENTRY—ONE NON-BUCCAL CANCER AFTER ENTRY—7 CASES

Case No	Ago	Promalignancy	Location	Time Interval	Location of Cancer	Evidence of Cancer	Time 1st Rx to End Result	End Result
29	62	L	L Lip & M	5 yrs	Stomach	Letter	5 yrs	D Ca.
30	58	K	L Lip	3 yrs	Prostate	P	2 yrs.	D Ca.
31	62	L	L Jaw	6 mos.	Thyroid	P	1 yr	D Ca.
32	58	L	Tongue	12 yrs	Rectum	P	14 yrs	D Ca.
33 ¹	60	K	L Lip	4 yrs	Stomach	Letter	4 yrs.	D Ca.
34	73	K	L Lip	4 yrs	Prostate	C	6 yrs	D Ca.
35 ¹	67	L	Mouth	8 yrs	Liver	Letter	8 yrs	D Ca.

1. End result report from Brockton Hospital

2. End result report from Exeter Hospital This patient also history of 3 local excisions of "growth" in front of ear before entry Was treated on entry for recurrence of skin cancer and 5 yrs later had another probable recurrence removed by his physician.

TABLE XVIII

NO CANCER BEFORE ENTRY—TWO CANCERS AFTER ENTRY, ONE BUCCAL—2 CASES

Case No	Ago	Promalignancy	Location	Interval	Location 1st	Evidence 1st	Interval 1st to 2nd	Location 2nd	Evidence 2nd	1st Rx to End Result	End Result
36	62	L	U Lip & M.	5 yrs	U Jaw	C	4 mos	Stomach	P	5 yrs.	D II
37	58	L&K	L Lip	1 mo	L Lip	P	8 yrs.	Sigmoid	P	8 yrs	L&W

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OPERATIVE SURGERY IN THE PULMONARY TUBERCULAR*

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WHILE the fundamental principles of surgery are unvarying wherever applied, surgical procedure may properly be modified by dyscrimism, systemic infections and specific diseases that are apart from conditions for which operation may be indicated. Thyroid disease, diabetes, hypertension, toxemia resulting from urinary obstruction, etc., each call for special modifications of procedure in preoperative preparation, anesthesia, technique, and after-care. This is equally true of tuberculosis. Pulmonary tuberculosis is variant not only because it is tuberculosis, but because of involvement of the respiratory system.

In diagnosis, in the subject of active advanced disease, we may find a clouding of the picture. This may be particularly true in cases of acute and subacute infections. We have learned to discount the occasional absence of marked leukocytosis and abdominal rigidity in acute peritoneal cavity disease. Sometimes pain and tenderness appear less than in the average patient similarly afflicted, when keen observation only can appreciate the acuteness of onset, in one carrying the toxic manifestations of pulmonary tuberculosis. The differentiation of acute appendicitis and other infections involving the peritoneum, and tubercular invasions or metas-

tases, may present a difficult diagnostic problem. Here the knowledge of the previous blood picture, always available in the sanatorium patient, is a distinct aid.

Preparation should be meticulously careful in the presence of active disease, and measures should be taken toward avoidance of psychic shock. This becomes easier when operation is to be performed in the sanatorium, but if the patient has been moved to another institution, to new surroundings and among different and strange personnel, care ought to be exercised in the suggestions of initial contact. Morale, so important to the end-results in operative surgery, is particularly so in this field. The toxic patient is infected readily making scrupulous preparation of the skin important.

Selective anesthesia we consider especially important. Could an anesthetic be chosen that would produce complete analgesia and at the same time prevent the effects of traumatism from reaching the cells of the central nervous system, if it would not contribute to surgical shock or would tend to prevent it, if it would not diminish or abolish the coughing or swallowing reflexes, or irritate the bronchial mucosa, and if its effect upon the vital organs, as the liver, kidneys, and heart, were not injurious, the task would be simple. This we cannot do, for ideal anesthetics are yet to be discovered.

Local infiltration with ample amounts of dilute procaine solutions, whenever practical, is safest and most desirable. Regional anal-

*Read before the Worcester District Medical Society at the Rutland State Sanatorium in the Symposium on Pulmonary Tuberculosis on October 11 1933

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gesia, by nerve blocking, in certain areas meets the requirements nicely. One of the best examples of this is cordal and transsacral injection in anal and rectal procedures. Where the work is to be done below the level of the diaphragm and infiltration is impractical, in our opinion, spinal block best meets the indications with, however, due regard for the usual contra-indications to this form of anesthesia. General anesthesia with all its objectionable features, in pulmonary surgery is a better choice than spinal for operations upon the upper portions of the body. Ethylene gas, nitrous oxide and if necessary, even ether may be used. Narcotics and basal anesthetics should be used to relieve apprehension and lessen the amount of drugs by inhalation and the "Anocel-Association", technique of Crile, has a logical place in this field. Avertin is a desirable choice occasionally, particularly where a quiet respiration is desired. One of our objections to its use is the abolishment of cough and swallowing reflexes. It appears to be the most desirable of all basal anesthetics from the patient's standpoint. The general anesthetics, particularly ether, of themselves increase the burden and contribute to shock. In this fact lies a greater objection than in any local effect upon the bronchial mucosa, however much that may be. A skilled anesthetist is highly desirable. Care should be exercised in diagnosis to avoid unnecessary operations. Gentleness of technique is especially indicated, for the healing processes of the toxic tubercular are certainly far below the normal and reasonable speed in operating, particularly where general anesthesia is used. Spinal anesthesia is particularly an aid to rapid work and avoidance of tissue injury. Operations that may be done in multiple stages sometimes may be successfully thus done where otherwise shock might prove serious. Shock and infection are certainly much more facilitated in the tubercular than in the normal. Infected tissue must be amply drained and re-opening of wounds, sloughing edges, and even indolent ulceration may be avoided only by scrupulous care. Intestinal fistulae more often follow operations where incision or injury to intestine has been done than in the non-tubercular patient. This fact is to be kept in mind when dealing with conditions involving the bowel.

Pregnancy in the subject with pulmonary tuberculosis has served to annoy tuberculosis specialists, obstetricians and surgeons alike since the statement of DuBois, many years ago, that "If a woman threatened with phthisis marries she may bear the first accouchement well, the

second with difficulty, the third never." That therapeutic abortion may be indicated in the case of pulmonary disease is undoubtedly perfectly true but it is not our purpose to define its indications. However, the mere diagnosis of tuberculosis does not justify abortion in our opinion. The definition of indications in a given case must necessarily rest to a large extent upon the physicians and tuberculosis specialists. Operation should never be done except with ample consultation with obstetricians and tuberculosis specialists, and then the operator should still reserve the right to form an opinion and consult his conscience before proceeding to evacuate the uterus. It will perhaps become his duty occasionally, but he must be wary of the urge he may meet to operate where definite necessity does not obtain. Children are born of tubercular mothers without apparent maternal injury sometimes and the average surgeon cannot usually alone determine when that happy outcome may result.

Delivery at term also presents an important problem. Keen obstetrical judgment is important and the prophecy as to whether labor will be easy or difficult places real responsibility upon the accoucheur. Cesarean section competently performed is probably preferable to "watchful waiting" wherever the prospect of difficult labor is present, particularly in the presence of advanced active disease, especially in the presence of pneumothorax and cavitation. However section in itself is a hazard both as to mortality and morbidity as has been repeatedly proved statistically, and we believe is not indicated simply because the prospective mother has pulmonary tuberculosis.

Brevity of time allotted for the papers in this symposium precludes extensive discussion of the controversial question as to whether surgery upon the tubercular shall be done in the general hospital or in the sanatorium. After a not inconsiderable experience in surgery upon the tubercular and with a moderate familiarity with operation upon pulmonary processes per se, in both sanatoria and hospitals, it has become our conviction that wherever the equipment is ample and the personnel both ample and competent, there is much to be said in favor of the surgical department of the sanatorium. We take a middle ground believing that tuberculosis sanatoria should be properly equipped and manned for surgery, also that the pulmonary patient should not be denied the privileges of general hospitals.

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OPERATIVE SURGERY IN THE PULMONARY TUBERCULAR*

BY FRANK H WASHBURN, M D †

WHILE the fundamental principles of surgery are unvarying wherever applied, surgical procedure may properly be modified by dyscrinism, systemic infections and specific diseases that are apart from conditions for which operation may be indicated. Thyroid disease, diabetes, hypertension, toxemia resulting from urinary obstruction, etc., each call for special modifications of procedure in preoperative preparation, anesthesia, technique, and after-care. This is equally true of tuberculosis. Pulmonary tuberculosis is variant not only because it is tuberculosis, but because of involvement of the respiratory system.

In diagnosis, in the subject of active advanced disease, we may find a clouding of the picture. This may be particularly true in cases of acute and subacute infections. We have learned to discount the occasional absence of marked leukocytosis and abdominal rigidity in acute peritoneal cavity disease. Sometimes pain and tenderness appear less than in the average patient similarly afflicted, when keen observation only can appreciate the acuteness of onset, in one carrying the toxic manifestations of pulmonary tuberculosis. The differentiation of acute appendicitis and other infections involving the peritoneum, and tubercular invasions or metas-

tases, may present a difficult diagnostic problem. Here the knowledge of the previous blood picture, always available in the sanatorium patient, is a distinct aid.

Preparation should be meticulously careful in the presence of active disease, and measures should be taken toward avoidance of psychic shock. This becomes easier when operation is to be performed in the sanatorium, but if the patient has been moved to another institution, to new surroundings and among different and strange personnel, care ought to be exercised in the suggestions of initial contact. Morale, so important to the end-results in operative surgery, is particularly so in this field. The toxic patient is infected readily making scrupulous preparation of the skin important.

Selective anesthesia we consider especially important. Could an anesthetic be chosen that would produce complete analgesia and at the same time prevent the effects of traumatism from reaching the cells of the central nervous system, if it would not contribute to surgical shock or would tend to prevent it, if it would not diminish or abolish the coughing or swallowing reflexes, or irritate the bronchial mucosa, and if its effect upon the vital organs, as the liver, kidneys, and heart, were not injurious, the task would be simple. This we cannot do, for ideal anesthetics are yet to be discovered.

Local infiltration with ample amounts of dilute procaine solutions, whenever practical, is safest and most desirable. Regional anal-

*Read before the Worcester District Medical Society at the Rutland State Sanatorium in the Symposium on Pulmonary Tuberculosis on October 11 1933

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and injecting lipiodol. A few weeks after this was taken the patient became quite ill and remained so for about ten days.

Fig. 3 This picture was taken some time afterward a matter of about three weeks. There is the root of a tooth to be seen here, but it was mistaken for lipiodol as there are small amounts still scattered about the lobe.

The patient left the sanatorium against advice and later entered a general hospital where an x ray was taken.



FIG 4

Fig 4 This shows the root of a tooth very plainly. Little if any lipiodol remains in the lobe. The patient was operated on and died. Autopsy proved the shadow to be the root of a tooth. This case shows how obscure a foreign body can be and our assumption is that when this patient had his acute illness described a few moments ago the root of the tooth migrated from the abscess cavity to another portion of the lobe. Careful study of the first picture taken on admission to the sanatorium shows no evidence of any shadow where it was later seen.

CASE II

Female, aged 22. This patient was in bed for two and one-half years treated for tuberculosis. The sputum was never positive, hemoptysis many times averaged once a month. Plain picture showed a shadow which did not look like tuberculosis.



FIG 5.

Fig 5 Bronchiectatic areas after injection of lipiodol.



FIG 6

Fig 6 After removing granulation tissue of the branch bronchial openings much pus was aspirated and lipiodol injected. An abscess cavity seen with a fluid level. Material from this area showed no tubercle bacilli in direct smear culture, or inoculated guinea pigs. The patient had fourteen bronchoscopies over a period of eight months and daily postural drainage. Cough and expectoration ceased. Gained in weight and strength, discharged clinically well. Returned about one and one-half years later still feeling well and free from symptoms and entered the Rutland State Sanatorium Training School for Nurses.

These two cases, I believe, illustrate how more knowledge can be obtained by bronchoscopic instillations of lipiodol than injecting lipiodol supraglottically. In both of these cases the abscess would have been missed had the granulations and debris not been removed through the bronchoscope before instilling the lipiodol.

CASE III

Male, aged 21. The patient was an invalid for five years before admission to this institution. Much



FIG. 7

BRONCHOSCOPY IN THE SANATORIUM*

BY G ARNOLD RICE, M.D.†

SOME eight or ten years ago at a meeting at this institution various members of the Staff read papers on Pulmonary Tuberculosis. I remember one paper that dwelt quite at length on the importance of taking a careful and complete history and after, among other things demonstrating several cases where patients were sent to this institution with the diagnosis of tuberculosis without positive sputum, it was found that they were suffering from some other disease, not tuberculosis. The paper was summed up by saying that a diagnosis of tuberculosis should be made on all facts obtained by the history, physical examination, x-ray and laboratory findings. At that time the reader of the paper cautioned us that in general the diagnosis could not be made on x-ray examination alone, and x-ray at that time was simply one of the aids in diagnosis. A few years later, at another meeting here, the reader of a paper on the diagnosis of tuberculosis summed up his paper by saying that no chest examination was complete without an x-ray examination, x-ray was apparently becoming of more value. Without question the technique of taking pictures and the ability to interpret them had meantime greatly improved. It has been interesting to note that they have continued to improve, until now, with much better x-ray apparatus, films, etc., many times, the diagnosis can be made, I presume, on x-ray examination alone.

However, there are cases where with careful history, physical examination, laboratory and x-ray study, there still remains a question of exact diagnosis. In many of these cases bronchoscopic examination is of great help, also bronchoscopic treatment is of value in many of the patients who have a chest condition found not to be tuberculosis.

I have some slides which I hope will illustrate how the bronchoscope has been an aid in making the diagnosis, also where it has been an aid in treatment. All of these cases have been carefully studied before being referred for bronchoscopy and just enough will be told about them to illustrate the value of bronchoscopy in diagnosis and treatment.

CASE I

Male aged 34. History of cough of ten years' duration. Plain x-ray picture showed nothing definite.

Fig 1 Bronchiectatic cavities after injecting Ipiodol.

Fig 2 Large abscess after removing many granulations, and pus from the branch bronchial openings.

*Read before the Worcester District Medical Society at the Rutland State Sanatorium in the Symposium on Pulmonary Tuberculosis on October 11, 1933.

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FIG 1

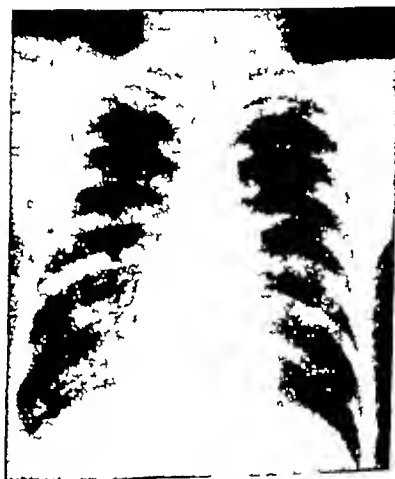


FIG 2



FIG 3

done, curved aspirating tube inserted into the right upper lobe bronchus. Few cc. of pus were aspirated. Direct smear showed numerous tubercle bacilli. Diagnosis of tuberculosis made bronchoscopically.



FIG 11

CASE VII

Female aged 29. This patient was sent here with diagnosis of tuberculosis but with negative sputum.



FIG 12

Fig 12 Plain picture taken. No definite diagnosis could be made from this picture. Bronchoscopy was done. Growth was seen in the right bronchus. Biopsy was done. Pathological report: "Adeno-carcinoma." A bilobectomy was done at the Massachusetts General Hospital one and one-half years ago by Doctor Churchill. The right middle and lower lobes were removed. Patient today is living and well, taking care of two children and leading an active normal life. This shows the value of an early diagnosis.

CASE VIII

Male, aged 42. The patient was sent here with a diagnosis of tuberculosis with the sputum negative.

Fig 13 A plain x ray picture was taken. No definite diagnosis could be made from this picture alone. The staff advised chest tap at one of the conferences. This was done with a resulting dry tap. He was referred for bronchoscopy. At the bronchoscopy a tumor was seen in the right major bronchus. Biopsy was done. The pathological report was as follows: "Epidermoid Carcinoma—Type 2." The patient was referred to the Pondville State Cancer Hospital from

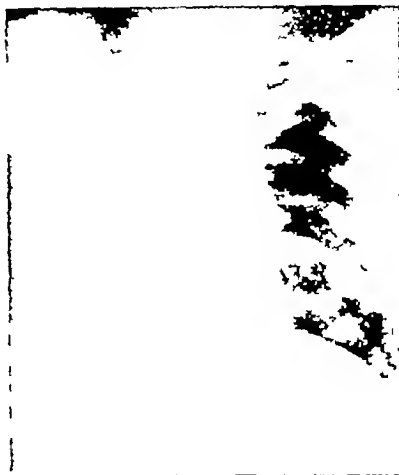


FIG 13.

where a number of weeks later, he was discharged as incurable. A few weeks later he died at home. This shows the result in a late diagnosis.

CASE IX

Female aged 31. She was admitted to this institution December 12, 1931 in poor condition and suffering from a severe attack of asthma.

A plain x ray picture showed nothing definite. December 24, 1931 the staff made a tentative diagnosis of tuberculosis. The patient continued to lose weight and to have asthma. January 15, 1932, she was placed on the danger list and her relatives were notified. She was put on digitalis. A week later bronchoscopy was done. Bronchial lavage with normal salt solution. Relief of asthma was immediate. The patient received five bronchoscopic treatments after which she had no more asthma. Her condition in general continued to improve and she was discharged July 26, 1932, in good condition. Diagnosis: Asthma.

CONCLUSION

I wish to say in conclusion that in cases of hemoptysis not proved to be tuberculosis and cases of unexplained cough, we believe that bronchoscopy should be seriously considered as an aid in diagnosis. Bronchoscopy can be done under local anesthesia, general anesthesia is never necessary, the operation can be done in a few minutes without too great inconvenience to the patient.

cough and expectoration, day and night. He was weak, thin and emaciated, had hemoptysis many times. The sputum was never positive for tuberculosis. Plain picture showed nothing definite.

Fig 7 Bronchiectasis, saccular type, an advanced case.

This patient received eighty-two bronchoscopies over a period of twenty-one months and daily postural drainage. He gained in weight and strength, the gain in weight was twenty-two pounds. He was discharged much improved. At the time he was discharged he stated that he felt perfectly well. He is at the present time self-supporting, leading an active life. He has been an employee of this institution for over a year. He still does postural drainage twice a day, which are the only times he coughs.

CASE IV

Female, aged 20. The patient had pneumonia six months ago. Plain picture showed nothing definite. She had failed to gain in weight and strength, continued to cough and had occasional blood-streaked sputum which showed no tubercle bacilli in the smear.



FIG 8

Fig 8 Comparatively early bronchiectasis. Smear of material direct from the bronchus showed no tuberculosis. Cultures and guinea pig inoculations negative for tuberculosis. She had seven bronchoscopies, weekly and daily postural drainage. The cough and expectoration ceased, she gained in weight and strength, and now weighs more than she ever did in her life.

These two cases show the possibilities of bronchoscopic treatment in the advanced case, and in the comparatively early case, how quickly and effectively bronchoscopic treatment can aid in clinical recovery.

CASE V

Female, aged 7.

Fig 9 This picture was shown by courtesy of Doctor Davidson of Worcester, Massachusetts. The patient was taken to Doctor Davidson's office for examination and to determine the advisability of tonsillectomy. The child was thin, pale and below par physically, and had practically no cough. Doctor Davidson found that a roentgenologist in Boston had taken a picture nine months previously. He wrote to the roentgenologist whose report apparent-

ly showed that the same shadow existed nine months before Doctor Davidson made a tentative diagnosis of atelectasis of the right middle lobe. He referred the patient for bronchoscopic examination. Bronchoscopy was done and 15 cc of thick, frank pus was aspirated from the right middle lobe bronchus. Direct smear showed organisms usually found in lung abscess, no tubercle bacilli. A guinea pig was inoculated.

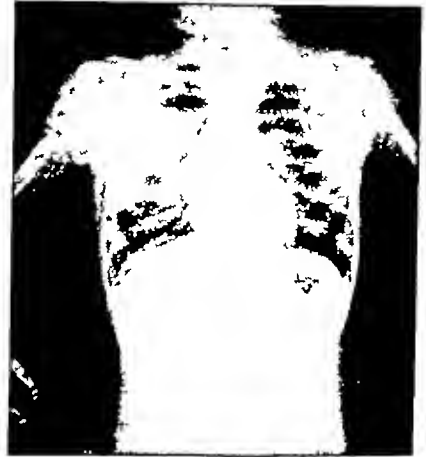


FIG 9



FIG 10

Fig 10 This picture was taken fourteen days after bronchoscopy. It shows the middle lobe clearing. The guinea pig, five weeks after inoculation, was killed and found to have tuberculosis. This is a case of tuberculosis diagnosed with the aid of the bronchoscope.

CASE VI

Male, aged 49.

Fig 11 This picture was shown by courtesy of Doctor Davidson. The patient was a wanderer. He saw nineteen physicians but no diagnosis was made. He was in a general hospital for two months, and left against advice. He had a harsh, non-productive cough, steady loss of weight and strength. He was sent to me by a nurse for bronchoscopy. I referred him to Doctor Davidson for x-ray and advice as to need of bronchoscopy. He was returned to me by Doctor Davidson with tentative diagnoses: 1—Tuberculosis, 2—Large lung abscess. Bronchoscopy was

CHEST SURGERY

Chest surgery is not incompatible with bilateral pneumothorax. Of the 13 cases in the house, three had one intrapleural pneumolysis, two had two pneumolyses operations, and one had three pneumolyses operations performed. The pneumolyses operations were performed by Dr. Frank H. Washburn of Holden. Four cases had a phrenicectomy.

The proportion of the bilateral pneumothorax

to the unilateral form in this sanatorium is about ten per cent. We have here at the present time, 125 cases of artificial pneumothorax, and as mentioned before, 13 are bilateral cases.

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EVOLUTION OF PNEUMOTHORAX THERAPY*

BY ARMAND LAROUCHE, M.D.†

THE following is not an attempt to give a complete history of pneumothorax therapy but is a short discussion of a few important points which may be of interest.

In this country, only four years after the original report of Forlanini, the first physician to use this therapy and to urge the medical profession to do so, was John B. Murphy of Chicago who reported five cases in 1898. He later declared that he knew nothing of Forlanini's work at the time. His pupil Lemke¹ reported the treatment of 53 cases by a similar method at a meeting of the American Medical Association in 1901, but his paper was practically ignored, and his premature death was one of the causes of the delay in the acceptance of the treatment by the medical profession in this country. It was not until ten years later that it was used to a certain extent by Harris, Mary Lapham, Robinson, Balboni and Floyd.

In this institution, pneumothorax was introduced in August, 1911. At that time it was looked upon as an experiment, and for experimental purposes was tried out in a large number of cases in the different stages of pulmonary tuberculosis. In 1914, the results were reported as follows: 74 cases had been treated and 23 or 31 per cent had been benefited while 51 or 69 per cent had received no benefit at all.

Alley² wrote in 1919, "those results were considered more or less doubtful and consequently during the last three years (1915-1918) we have given the course of nitrogen gas treatment to but 21 patients, our results however have been much more gratifying and successful. Sixty-six per cent were improved. All the cases had followed the strictest routine as regards fresh air, rest, regulated diet and exercise for several months previous to the gas treatment and still had failed to improve."

The above statement gives a good idea of the type of patient which was given the treatment

at that time not only here but throughout the United States and Europe. With the exception of a few workers in different countries, such as Rist in France, Brauer in Germany, Begg in the United States, and their followers, the majority believed with Kuhn that "pneumothorax treatment was only a last resort for severe and hopeless cases."

These ideas prevailed for several years and were apparently due to lack of scientific control in the selection of cases and to ignorance of the transformations in the chest while the treatment was given. It was only when x-rays were better known, and more liberally used, that the confusion decreased and the value of the treatment was generally recognized.

In this sanatorium, the number of patients treated by pneumothorax began to increase in the early nineteen-twenties. The progress was rather slow at first but was quite rapid during the last four or five years as indicated below:

1928	54 cases treated by pneumothorax 770 x rays taken
1929	117 cases treated by pneumothorax 1074 x rays taken
1930	138 cases treated by pneumothorax 1605 x rays taken
1931	178 cases treated by pneumothorax 1581 x rays taken
1932	194 cases treated by pneumothorax 2180 x rays taken

In the annual report for the year 1925, it is noted that 152 fluoroscopic examinations were done during the year, at the present time we are doing that number every week. I have included these figures to emphasize the extreme importance of the use of the x-rays in the diagnosis and treatment of pulmonary tuberculosis.

During the year 1932, the average number of patients treated by pneumothorax was about 125, or 33 per cent of the total number of patients in the sanatorium, including those who had been started in the previous years and were still under treatment here. The average number of patients treated by pneumothorax in New England at that time was about five per cent.

*Read before the Worcester District Medical Society at the Rutland State Sanatorium, in the Symposium on Pulmonary Tuberculosis on October 11, 1933.

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BILATERAL PNEUMOTHORAX*

BY GABRIEL NADEAU, M.D.†

HISTORY

THE first mention of bilateral pneumothorax for the treatment of pulmonary tuberculosis was made in Rome in 1912 at the International Congress for Tuberculosis. In 1928, two excellent studies on the subject were published—one by De Castiglione, the other by Terrasse. In this country, Dr. Geer was one of the first to use it with success. He made a preliminary report of his experience with that form of treatment in 1923¹. It was first used in this institution by Dr. Jacob Kaminsky, who reported on two cases in 1931².

In this country, symmetrical pneumothorax or bilateral pneumothorax was still a debatable procedure until a few years ago, and it has been used to some extent only during the past three or four years. One of the reasons for so little use was the teachings of the physiologists. We read for instance, in the *Treatise of Physiology* of Landois, that "bilateral simultaneous pneumothorax is always fatal."³

CLASSIFICATION

Symmetrical pneumothorax can be divided into two types

- 1—the simultaneous type
- 2—the alternate type

In the simultaneous type, the two lungs are submitted to collapse at the same time. In the alternate type, the opposite lung is collapsed only after the other side has reexpanded.

INDICATIONS

- 1—Early bilateral lesions in young people
- 2—The breaking down of one lung after the opposite lung has been collapsed
- 3—To correct a marked displacement of the mediastinum due to unilateral pneumothorax. In that case only a small marginal collapse is necessary.

CONTRA-INDICATIONS

- 1—Poor general condition. The symmetrical pneumothorax is quite a strain on the patient, and only subjects in good general condition can be expected to improve under it.
- 2—Complications: tuberculous laryngitis, tuberculous enteritis or any other form of active extrapulmonary tuberculosis are contra-indications.
- 3—Acute progressive lesions on both sides.
- 4—Old fibrous lesions.

*Read before the Worcester District Medical Society at the Rutland State Sanatorium in the Symposium on Pulmonary Tuberculosis on October 11, 1933.

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TECHNIQUE

- 1—The technique of insufflation is the same as for unilateral pneumothorax.
- 2—It requires closer observation, however, and frequent fluoroscopy, so as not to push the collapse too far and make the patient dyspneic.
- 3—There should be an interval of a few days between the refill of both lungs, although in my service I have a few times refilled a patient on both sides in one sitting without any discomfort.
- 4—A selective collapse should be obtained if possible. It is more important to strive toward the obtaining of a selective collapse in bilateral pneumothorax than in unilateral pneumothorax, because the patient should be left some lung surface with which to breathe. The collapse of the lungs, however, can be pushed surprisingly far. It has been demonstrated that a patient can be comfortable with only a tenth of his lung area left.

PLEURAL COMPLICATIONS

The pleural complications, like the formation of fluid or the perforation of the lung, are not more frequent in the bilateral than in the unilateral form, but they are of more serious consequence. An effusion filling the pleural cavity on one side, and a collapse on the other, will make the patient extremely ill.

REPORT OF CASES

In this institution, we have been using bilateral pneumothorax since 1929. We have had 26 cases up to the present time. Twenty-four were of the simultaneous type, and 2 were of the alternate type. Thirteen were moderately advanced cases and 13 were far advanced cases.

From 1929 to 1931, the staff was a little reluctant to use this form of treatment on early cases. During that period, seven cases were started. They were almost terminal cases, and pneumothorax was done only as a last resort. Four of these had complications, such as tuberculous laryngitis and tuberculous enteritis. After a year or so, the treatment had to be discontinued on five of them because the progress of the disease could not be checked. These five are dead. The other two are living and doing well. Of the remaining 21 cases, seven have been discharged and are doing well. Thirteen are still here under treatment, and are also doing well. The sputum is now negative and has decreased to a scanty amount in 16 of these cases. It has remained positive in five of them. During 1932 and 1933, we have collapsed more ideal cases.

results obtained with it more than justify its use in the numerous cases submitted to it, even if there are occasional complications following the procedure. It is another factor which is largely responsible for the increase in the number of patients treated successfully by pneumothorax. To illustrate this statement, I shall briefly review the work done here on patients admitted in 1932 with regard to pneumothorax treatment.

393 patients were admitted during the year, classified as follows—

- 44 minimal
- 155 moderately advanced
- 159 far advanced
- 7 childhood type
- 3 carcinoma
- 6 bronchiectasis
- 17 unclassified

Of the 358 cases of pulmonary tuberculosis, 145 cases or 40 per cent were considered suitable for pneumothorax therapy. Of this group of 145 cases, 5 or 14 per cent, refused the treatment, in 38 or 26 per cent, there was no free pleural space, in 42 or 29.7 per cent, the pneumothorax was considered effective, and in 60 or 41 per cent, the pneumothorax was consid-

ered ineffective. In this group of 60 ineffective cases, the pneumothorax was discontinued or lost in 17 cases, pneumolysis was attempted in 43 and was considered successful in 33 and unsuccessful in 10 cases. Of the last 10, phrenicectomy was performed in 5 cases and pneumothorax continued, and thoracoplasty was performed in 2 cases. Consequently, instead of having only 42 cases, or 29 per cent of the 145 cases treated effectively by pneumothorax as would have happened a few years ago, we had 80 cases or 55 per cent.

I think that our results justify to say the least, the increase in the number of patients treated by collapse therapy, and we see no reason why these forms of treatment should not be continued and applied to a greater number of patients.

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VACCINATION FOR PSITTACOSIS

In the Delta Omega lecture at the Yale Medical School on April 27 Dr Thomas M. Rivers of the Rockefeller Institute for Medical Research proclaimed his belief in the potency of vaccination against psittacosis.

He reported that seven laboratory workers at the Rockefeller Institute had been given this vaccine.

SUMMARY OF MORTALITY FROM AUTOMOBILE ACCIDENTS

NUMBER OF DEATHS APRIL 17, 1932 TO APRIL 14 1934, FROM AUTOMOBILE ACCIDENTS

The Bureau of the Census announces that during the four weeks ending April 14 1934 86 large cities in the United States reported 616 deaths from automobile accidents. This number (616) compares with 513 deaths during the four weeks ending April 15 1933. Most of these deaths were the result of accidents which occurred within the corporate limits of the city although some accidents occurred outside the city limits.

For comparison the number of deaths due to automobile accidents within city limits is desirable. Such figures are available for the four week period ending April 14 1934 and for the corresponding

four week period of 1933 for all of the 86 cities the four week figure in 1934 being 503 as contrasted with 421 for the corresponding four weeks in 1933.

Considering by four week periods since January 1930, total deaths from automobile accidents whether within the city limits or outside the lowest total (513) appears for the four week period ending April 15 1933 and the highest (577) for the four week period ending January 23 1932.

MORTALITY RATES

Telegraphic returns from 86 cities with a total population of thirty seven millions for the week ending April 21 indicate a mortality rate of 12.2 as against a rate of 11.0 for the corresponding week of last year. The highest rate (18.9) appears for St. Louis Mo. and the lowest (6.8) for Yonkers N. Y. The highest infant mortality rate (14.0) appears for New Orleans La. and the lowest for Duluth Minn., Evansville Ind. Grand Rapids Mich., Long Beach Calif., Schenectady N. Y., Somerville, Mass. and Tacoma, Wash. which reported no infant mortality.

The annual rate for 86 cities is 12.6 for the sixteen weeks of 1934 as against a rate of 12.1 for the corresponding period of the previous year—*Bureau of the Census*

A survey was made that same year by Hawes³ who obtained the opinion of thirty to forty leading men in tuberculosis work in this country, including California, New York, the Mid-West and New England, concerning the number of cases out of a given one hundred that should at least be granted the opportunity of having some form of collapse therapy, such as pneumothorax, phrenicectomy or thoracoplasty. The figures varied from 10 per cent to 50 per cent. To mention a few names: Dr Henry D Chadwick, who had 1500 patients under his supervision in Detroit, reported that 57 per cent of them were receiving some form of collapse therapy, Dr Willard B Soper of New Haven gave approximately 60 per cent, Dr James A Miller of New York gave 30 per cent, and so on.

The factor which contributed the most to bring about the definite establishment and general recognition of pneumothorax therapy is, as I have said before, undoubtedly the development of the x-ray which enabled the clinician to make a more judicious choice of cases, to develop a rational technique and to devise methods of increasing the efficiency of the treatment.

Artificial pneumothorax at the present time is the treatment considered for favorable cases and is not recommended for terminal cases as in the past. Of course there is still a great divergence of opinion with regard to the type of case which should or should not be collapsed. "This is due to the differences in the conception of various workers concerning the clinical pathologic states of the diseased lung", according to Dr Edgar Mayer. However, most of the phthisiologists agree that the unilateral case showing caseation, with or without cavity formation, should be submitted to the treatment, but beyond this the agreement ends. Whether the early case, and the bilateral case, should be collapsed is still a debatable question. It is our practice to collapse all early lesions showing clearly on the x-ray. The reason for this is that we see too many young people leaving the sanatorium as quiescent cases, in good general condition, returning sooner or later in a pitiful state. Another reason for so doing is the fact that often small cavities are not visible on the x-ray until after the lung has been partially collapsed, and, finally, because 25 per cent of moderately-advanced and far-advanced cases have no free pleural space. We also collapse readily one lung when the lesion in the contralateral lung is localized and shows signs of fibrosis. Another type of bilateral lesion which we do not hesitate to collapse is the so-called "cross-fire infection" with a cavity in the upper half of one lung and an exudative lesion in the base of the other lung.

The best results are anticipated in cases with lesions localized and showing little or no fibrosis, as cavities with thick firm walls are often only

displaced, or partly collapsed, especially if the mediastinum is mobile.

With reference to technique, Murphy in 1898 advised the introduction of gas into the pleural cavity until the patient was frankly dyspneic, and at least between 2000 and 3000 cubic centimeters for the first dose. He also advocated a very short period of treatment, such as only one dose of gas in certain cases. In 1916, Fishberg⁴ wrote that he himself did not inject more than 300 cubic centimeters for the first dose but that he used as much as 600 for the second and 1200 cubic centimeters for the third dose. He also stated that many workers did not hesitate to introduce two to three times as much, and that some even attempted to secure a complete collapse of the lung during the first operation. In the early nineteen-twenties 1000 to 1500 cubic centimeters introduced every three weeks was still the practice in many places. To start a case now, it is generally accepted that small doses of air, frequently repeated, are much safer and give far better results. It is our practice not to use more than 200 to 300 cubic centimeters of air for the first dose and to repeat it at least twice a week for a while. It is seldom that we give more than 500 cubic centimeters at any one time.

Unfortunately, it is not always possible to induce pneumothorax when it seems indicated, and adhesions often prevent it from being effective when it has been induced. In 1924 Matson⁵ reported

In 600 cases, 120 or 20 per cent had no free pleural space.

In 245 cases, or 40.8 per cent, the collapse attained was only partial.

In 235 cases, or 31.2 per cent only, was a satisfactory pneumothorax induced.

Only a very few did not seem to have adhesions.

For those with no free pleural space, nothing can be done of course so far as pneumothorax is concerned, and up to a few years ago for those with only a partial and ineffective collapse, the operator had only the choice of trying to stretch the adhesions with high positive pressure, which is a very dangerous procedure, or giving up the pneumothorax entirely, and hoping for the best.

Since 1927 (at least in this part of the country, since these procedures had been practiced in Europe for several years) phrenicectomy and pneumolysis have been life savers for a good proportion of those cases.

Phrenicectomy is now used to improve the collapse in connection with pneumothorax at least in this institution only when pneumolysis has failed, and for diaphragmatic adhesions especially, it is still of great help in relieving the pressure and allowing the lung to be further collapsed. It also has the advantage of lessening the dangers of positive pressure.

Pneumolysis is now considered an indispensable adjunct to artificial pneumothorax and the

results obtained with it more than justify its use in the numerous cases submitted to it, even if there are occasional complications following the procedure. It is another factor which is largely responsible for the increase in the number of patients treated successfully by pneumothorax. To illustrate this statement, I shall briefly review the work done here on patients admitted in 1932 with regard to pneumothorax treatment.

393 patients were admitted during the year, classified as follows—

- 44 minimal
- 155 moderately advanced
- 159 far advanced
- 7 childhood type
- 3 carcinoma
- 6 bronchiectasis
- 17 unclassified

Of the 358 cases of pulmonary tuberculosis, 145 cases or 40 per cent were considered suitable for pneumothorax therapy. Of this group of 145 cases, 5 or 14 per cent, refused the treatment, in 38 or 26 per cent, there was no free pleural space, in 42 or 29.7 per cent, the pneumothorax was considered effective, and in 60 or 41 per cent, the pneumothorax was consid-

ered ineffective. In this group of 60 ineffective cases, the pneumothorax was discontinued or lost in 17 cases, pneumolysis was attempted in 43 and was considered successful in 33 and unsuccessful in 10 cases. Of the last 10, phrenicectomy was performed in 5 cases and pneumothorax continued, and thoracoplasty was performed in 2 cases. Consequently, instead of having only 42 cases, or 29 per cent of the 145 cases treated effectively by pneumothorax, as would have happened a few years ago, we had 80 cases or 55 per cent.

I think that our results justify to say the least, the increase in the number of patients treated by collapse therapy, and we see no reason why these forms of treatment should not be continued and applied to a greater number of patients.

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VACCINATION FOR PSITTACOSIS

In the Delta Omega lecture at the Yale Medical School on April 27 Dr Thomas M. Rivers of the Rockefeller Institute for Medical Research proclaimed his belief in the potency of vaccination against psittacosis.

He reported that seven laboratory workers at the Rockefeller Institute had been given this vaccine.

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The annual rate for 86 cities is 12.6 for the six teen weeks of 1934, as against a rate of 12.1 for the corresponding period of the previous year—*Bureau of the Census*

VERMONT STATE MEDICAL SOCIETY

THYROID DISEASES*

BY FRANK H. LAHEY, M.D.†

I WOULD like to discuss with you some of the more recent developments in thyroid surgery and keep away as much as possible from the more common aspects of thyroid disease and so I will perhaps in a more or less haphazard manner, speak of several subjects relating to thyroid states

I first wish to speak of exophthalmic goitre in children. When we first began to deal with exophthalmic goitre or hyperthyroidism in young children for instance at the age of three or three and a half, we were quite timid about the condition because we had not had a background of experience from which to draw and because of the reaction of such young children, particularly as relates to the high degrees of tachycardia in this disease. We all know how easily young children react to any toxic influence and how easy it is for marked tachycardia and high temperatures to result from any intoxication. Our first experiences with hyperthyroidism impressed us very seriously since children of three, four and five with hyperthyroidism were able to show such tremendous degrees of tachycardia and temperature reactions to the disease. At the beginning of our experience we were opposed to operating on these children because of this apparently dangerous reaction but we have learned now from a large background of experience that hyperthyroidism even in very young children, with few exceptions, is very similar to hyperthyroidism in the adult. We know that intense hyperthyroidism in children is perhaps a little more dangerous from a surgical point of view than intense hyperthyroidism in a young adult, but the clinical course of the disease, the reaction and the postoperative results following subtotal thyroidectomy are almost exactly parallel with those following surgical procedures for this disease in adults.

The two exceptions as relates to hyperthyroidism in very young children as compared with the disease in adults are the following: first, the matter of severe postoperative reactions about which we have already spoken. Because of the excessive reactions which can occur in children, thus making it impossible to differentiate true toxicity reaction and the reaction which the very young individual is capable of, it becomes necessary, we believe, in

very severe cases to divide the operation into two stages. We, therefore, feel that in severe hyperthyroidism in young children, if there is the slightest doubt about the condition as to whether the reaction is evidence of true toxicity or of age, it is better to be on the safe side and do the operation in two stages. For this reason, we do a much higher percentage of two-stage operations in young children with severe hyperthyroidism than in adults.

Next, we know that if one removes too much thyroid in an adult, it can be replaced very satisfactorily by the administration of thyroid extract. In children, however, one must realize that the thyroid gland is not only essential for the maintenance of metabolism but also necessary during the course of their development. For this reason, we believe that it is wise to take extreme precaution to be sure that too much thyroid tissue is not removed at the operation and to be certain that minus degrees of metabolism are not produced. We, therefore, believe that in doing subtotal thyroidectomies in children, it is wise to leave larger remnants of thyroid than would be left in a similar case in an adult.

As the result of our experience with a number of these cases, we now feel that the indications for surgery, even in very young children, as young as three years of age, in hyperthyroidism are exactly similar to the situation with adults and the results are equally good.

I want to present to you also one of the dangers relating to exophthalmic goitre which has not been particularly stressed in many of the discussions of this disease and that is, the danger to the eyes. Anyone having a patient with marked exophthalmos must remember that that patient is only a step removed from being totally blind. We have seen six eyes in this disease lost from extreme exophthalmos.

If one has a patient with extreme exophthalmos, this can go on to such a degree that lid pressure produces an edema of the conjunctivae with a wrinkling and molding of the conjunctivae. When one realizes that the conjunctivae receives its nourishment by osmosis and not by direct blood supply, it is easy to understand how readily erosion and slough can occur in this structure as the result of the edema, which causes the piling up and the lid pressure. Once an ulceration has taken place in this edematous and wrinkled conjunctiva, infection of the eyeball eventually requiring enucleation is but a step in advance of the operation.

*Read before the Vermont State Medical Society at its Annual Meeting in Barre October 5 and 6 1933.

†Lahey, Frank H.—Director of Surgery, The Lahey Clinic.
For record and address of author see This Week's Issue page 1034.

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Furthermore, anyone who operates on patients with marked exophthalmos should realize how easy it is to traumatize the eye, produce erosion of the cornea, infection and serious eye infection.

These patients are often taken to the operating room deeply narcotized by preoperative drugging. Unless their prominent eyes are protected, these stuporous patients may unconsciously drag the sleeve of the nightgown across their prominent conjunctiva, produce an erosion, infection and, as already stated, serious eye infection. It is essential also that anesthetists realize the danger of injury to exophthalmic eyes during operation and that these eyes should be protected with vaseline and gutta percha against injury during the anesthesia for thyroid operations.

There is another peculiar type of troublesome exophthalmos that up to recently has been but little understood and that is the postoperative exophthalmos which occurs in the presence of minus degrees of metabolism following successful subtotal thyroidectomy as relates to the relief of symptoms in certain cases of hyperthyroidism.

We have occasionally seen cases as have other surgeons dealing extensively with hyperthyroidism in which subtotal thyroidectomy was successfully done, an excellent result obtained as to relief of symptoms, but instead of the exophthalmos subsiding, it has become progressively more marked and this has gone on even in the presence of marked minus degrees of basal metabolism.

Likewise we have seen such a situation occur in the form of unilateral exophthalmos in a patient operated upon by subtotal thyroidectomy elsewhere with the production of minus metabolism and relief of symptoms but progressive increase in prominence of a single eye.

This type of exophthalmos, occurring as it does in the absence of symptoms of hyperthyroidism and in the presence of a minus metabolism, has always been difficult to understand and there was no satisfactory explanation for it until recently, following the investigation of Dr Howard Naffziger of San Francisco.

Dr Naffziger has demonstrated that the cause of exophthalmos in these cases with minus metabolism is due to a myxomatous infiltration of the ocular muscles producing swelling of these muscles to such an extent that they fill the orbital sockets and push the eyes forward. For this condition, he has developed an operative procedure whereby the bony roof of the orbit is removed, thus producing greater room for the large ocular muscles and so, decompression of the orbital sockets and recession of the prominent eyes.

We have turned three cases of this type over to Dr Gilbert Horrax of our Clinic for this operative procedure, because of his interest in brain surgery.

A bony flap of skull is turned down on either side of the frontal lobe. The frontal lobes on both sides are lifted up and the entire bony roof of the orbit is rongeured away. The fibrous ring of Zinn, which produces constriction due to the swelling at the apex of the orbit is severed, thus relieving a vascular back pressure on the orbital contents. This has resulted in immediate recession of the eye, improvement in the exophthalmos and will be a valuable and useful operation in this hitherto intractable condition.

Another atypical state of hyperthyroidism about which we have written a good deal, is the hyperthyroidism occurring in old people.

One sees two types of hyperthyroidism in older people. Not infrequently when hyperthyroidism occurs in elderly people, there is the typical picture of activated hyperthyroidism as seen in younger individuals. On the other hand, there is a condition which we have termed "apathetic hyperthyroidism" in which many of the striking signs of activation associated with hyperthyroidism in younger individuals are absent.

I am particularly anxious to discuss this aspect of hyperthyroidism because it is so lacking in the striking clinical features of the disease and is, I believe, so often overlooked and undiagnosed.

One should realize that in elderly individuals, hyperthyroidism of this atypical variety may exist in the entire absence of any eye signs, even stare, and entirely without any enlargement of the gland. The gland, however, in this type of hyperthyroidism is usually firm and somewhat nodular as though filled with small pebbles. One should realize that in this apathetic type of hyperthyroidism, contrary to the type of facies seen in activated hyperthyroidism, the features are in complete repose and there is even the appearance of apathy which has caused us to distinguish this condition by the term, "apathetic hyperthyroidism." The forceful pounding apex beat which is so characteristic of activated hyperthyroidism is often entirely absent in apathetic hyperthyroidism, the hyperthyroidism occurring in the aged. The character of the pulse which in activated hyperthyroidism is often so snapping and toxic in character, is frequently not striking in apathetic hyperthyroidism. The skin which in activated hyperthyroidism is hot, moist and flushed, in apathetic hyperthyroidism is often cool, pigmented and wrinkled. The basal metabolism which in activated hyperthyroidism is often strikingly elevated, is in apathetic hyperthyroidism often only moderately elevated twenty-five thirty or thirty-five. There is, as a rule, with apathetic hyperthyroidism a progressive and considerable weight loss which we have stated because the period of time over which it extends is often not appreciated by the patient and frequently not by the examiner.

One should realize that these patients with

apathetic hyperthyroidism who are not activated and so do not present the striking danger signals of activated hyperthyroidism, nevertheless present great possibilities for an operative fatality. While they seem quite safe, it is always possible for them, following a subtotal thyroidectomy, to demonstrate unusual postoperative reactions.

I feel particularly impelled to speak of the postoperative reactions with apathetic hyperthyroidism because they are so different from the postoperative reactions with activated hyperthyroidism. These patients with apathetic hyperthyroidism may go downstairs from the operating room following too much thyroid surgery and instead of becoming delirious with rising pulse rates and marked activation, become stuporous, drowsy, apathetic and finally die in coma. Death with apathetic hyperthyroidism is entirely different from the postoperative deaths in activated hyperthyroidism.

One should always have in mind the possibility of apathetic hyperthyroidism in any patient with marked myasthenia, with moderate but definite and persistent degrees of tachycardia, with pigmented skin and with unexplained weight loss.

So strongly do we feel about the dangers of apathetic hyperthyroidism, that when we feel that any patient has real apathetic hyperthyroidism, we unhesitatingly divide the operation into two stages.

The end results following subtotal thyroidectomy for apathetic hyperthyroidism are quite as satisfactory as with activated hyperthyroidism.

Another somewhat unusual thyroid state is that of intrathoracic goitre. We have now operated upon 1,086 intrathoracic goitres of which 745 or 68 per cent extended nearly to the arch of the aorta in the mediastinum and 341 or 32 per cent extended to or below the level of the arch of the aorta, in the mediastinum.

We feel very strongly that any patient who is having any signs of mechanical respiratory obstruction should have his superior mediastinum x-rayed as to the possibility of an intrathoracic goitre.

We likewise feel from our large experience with goitre, now amounting to between twelve and thirteen thousand goitre operations, that any patient with an adenomatous goitre may have an unsuspected intrathoracic goitre. For that reason, all patients with adenomatous goitres should have x-rays of the mediastinum by which a flattening or deviation of the trachea can be demonstrated and intrathoracic extensions visualized.

We have repeatedly made the mistake of assuming that because the patient had a prominent adenomatous lobe on one side, it was unnecessary to do a mediastinal x-ray. This has resulted several times in our demonstrating in-

trathoracic goitres on the opposite lobe which were entirely unsuspected at the time of the original examination.

We feel strongly, therefore, that when patients have any of the signs that indicate the possibility of an intrathoracic goitre, respiratory difficulty, the presence of an adenomatous goitre or dilated superficial thoracic chest veins, they should always have an x-ray of the superior mediastinum.

No matter how deep intrathoracic goitres are, practically all of them can be removed. The mortality in the very deep intrathoracic goitres will be a little higher than in the average extrathoracic goitre but not materially so. The mortality from January, 1930 to 1933 in the intrathoracic goitres extending nearly to the arch of the aorta was 14 per cent, in those extending to or below the arch of the aorta, it was 25 per cent.

Intrathoracic goitre should not occur. Any patient with a goitre which is tending to become low in location should have it examined each year. If there is a tendency for the lower lobes to extend downward into the chest they should be removed before this extension occurs.

Malignancy of the thyroid gland, in our experience is but little understood by many men. It occurs almost entirely as degeneration of a previously existing benign adenoma or adenomata. We know of no clinical method whereby one can determine that a benign adenoma is or is not malignant. There is a time in all benign adenomata which become malignant, at which the malignancy starts but this fact is not clinically demonstrable at this period. Since practically all malignancy of the thyroid does originate in an adenoma which is originally benign, we feel strongly that all discrete fetal or embryonal adenomata—and these are largely the discrete adenomata—should be removed because of the danger of malignancy in them.

It has been demonstrated by Dr Howard M Clute in this Clinic that malignancy of the thyroid can be divided roughly into four groups. There is a group in which vessel ingrowth, that is, penetration of the adenomatous tissue through the vascular intima of a blood vessel, can be demonstrated. These, while not frankly malignant, are potentially malignant.

The next group is the papillary adenomatous type of malignancy, a type of carcinoma which is extremely radiosensitive. We have had some excellent results in these cases with x-ray therapy.

The next group are the adenocarcinomas in which there is a tendency for local recurrences, but practically all of which ultimately die. Finally, there is the fourth group in which are found most of the malignant cases, the small round cell carcinomas and the giant cell carcinomas which

metastasize locally and distantly and practically all of which cases also result fatally

We feel so pessimistic about the results with x-ray, radium or surgery in malignancy of the thyroid that we feel strongly that the salvation of patients with carcinoma of the thyroid is the removal of the adenomata in which the disease arises before malignant degeneration has occurred

We, therefore, definitely feel that it is wrong for doctors to tell patients with these discrete adenomata that they should not have them cared for until they trouble them, because when they trouble them, as a rule, it is too late to successfully remove them

I should like to speak to you about another condition concerning which we have repeatedly written, but one which occurs only occasionally in any average physician's experience unless he is dealing particularly with thyroid states in considerable numbers, that is the matter of acute hyperthyroidism or thyroid crises. One must realize that when a patient has hyperthyroidism, he is in a state of hypercombustion, that this hypercombustion can and is frequently combated by the patient by means of increased intake of water and food (fluid and fuel). On the other hand, if the hyperthyroidism (hypercombustion) becomes sufficiently intense, the patient will be unable to take in enough fluid and fuel to counteract the effect of this excessive burning-process. When this occurs, and the patient is unable by fuel and fluid intake to counterbalance this hypercombustion, he or she then begins to burn themselves. This then produces a state of acute hyperthyroidism or what we have termed a thyroid crisis.

We know that there are certain early indications attending a thyroid crisis and that if they can be recognized, measures can be undertaken which will successfully, in most instances, combat this excessive effect of hypercombustion.

There are certain conditions which tend to bring about this state of acute hyperthyroidism or thyroid crises one of the most common of which is infection. When a patient with hyperthyroidism acquires in addition an acute infection such as follicular tonsillitis, an alveolar abscess, an acute appendicitis or any other similar state, the hyperthyroidism is immediately intensified and this intensification can go on to the degree where delirium, vomiting and diarrhea occur—the states which characterize thyroid crises. When, for any reason, vomiting complicates the state of fairly acute hyperthyroidism, factors are then immediately present for the production of a serious thyroid crisis.

If a patient is unable to take in fluids or fuel, the elevated metabolism results in excessive combustion which brings about autocombustion, the patient consuming his own glycogen reserve in his liver. This produces further intoxication and undesirable symptoms, further intensification of the hyperthyroidism and eventually,

unless successfully combated, a fatality. Likewise, if patients with hyperthyroidism begin to have a diarrhea, they lose fuel and fluids so rapidly that the state of autocombustion and thyroid crisis may quickly appear.

It is desirable that patients should not be permitted to get into these advanced stages of intoxication with acute hyperthyroidism. For that reason, the onset of such a state should be recognized early and immediate measures undertaken to combat such a situation.

When we have been able to employ the measures to be spoken of, early in the onset of the thyroid crises we have been able to get most of these patients out of the crises successfully and safely.

The measures to be employed in established and impending thyroid crises are fluids, glucose, iodine, hypnotics and narcotics. When patients show signs of impending hyperthyroidism a Hendon indwelling intravenous needle should be tied in the long saphenous vein above the ankle. By means of this indwelling needle, we have been able to give these patients constantly for twenty-four hours intravenous salt solution drip at the rate of forty to sixty drops per minute. This has permitted us also to administer in these cases continuous intravenous glucose solution up to five, six and seven hundred grams in twenty-four hours. The amount of glucose solution which must be administered is dependent on the height of combustion and whether it is spilled over into the urine. One should employ five per cent glucose solution and not ten, since ten per cent in our experience produces thrombosis and occlusion of the vein.

When we first had to deal with these patients with acute thyroid states associated with vomiting and diarrhea, we were at a loss how to administer iodine to them but we have now learned by its repeated employment that it is possible to give iodine intravenously mixed with the salt solution. We, therefore, introduce fifty minims of Lugol's solution per day in the salt solution, giving it intravenously with the salt and glucose solution.

It is necessary not infrequently, because of the activation in these cases, to employ large doses of morphia and patients with hyperthyroidism will tolerate morphia much better than other cases. Sodium amytal and other hypnotics have also been of value in quieting these cases.

With the continuous administration of fluids and fuel in the form of intravenous salt solution and glucose, the effects of hypercombustion can be offset, these patients can be kept out of crises and in many instances be relieved of crises when they have progressed into them so that the advancing intensity of intoxication can be checked.

Once these patients have merged from crises, contrary to the teaching which used to be in

vogue concerning such thyroid states, that is, that it was unwise to operate on patients close to crises, we have put these patients on high carbohydrate diets, large fluid intake and at the end of two to three weeks, after their rescue from the crises, have instituted a first-stage right subtotal hemithyroidectomy. We have then sent them home for six weeks, at the end of which time they have returned for subtotal thyroidectomy on the remaining lobe.

We feel very strongly that when a patient is relieved of a thyroid crisis, unless something is done in the way of removal of thyroid tissue to check the advance of the disease, he may again go into a crisis and it will not be so easy the next time to rescue him from it. For that reason, we believe from our experience that it is wise to institute a first-stage subtotal right thyroidectomy soon after the patient has been removed from his crisis as a precaution against a return of the crisis.

This is an extremely important state and since it occurs only occasionally in everyone's experience, I believe it is important that family physicians be prepared to handle such emergency states by the methods described above, since if this is not done many of these patients in acute crises will die under the ordinary, less aggressive methods of treatment.

I think I can best close my general remarks on this subject with a discussion of what the end results are and what the mortality rates are in these cases. Dr H. M. Clute and Dr J. R. Veil of this Clinic have reported a five-year follow-up study on 97 cases of exophthalmic goitre every one of whom was seen, examined and had a basal metabolism here at the Clinic five or more years after his operation. Of these, 82 patients are perfectly well, requiring no further operation, seven are well with reoperation and removal of more thyroid tissue, three are well with the constant administration of a small amount of iodine and three have myxedema. These are dependable and, I believe, quite satisfactory end result figures in such a serious state.

As stated above, we have now performed twelve thousand, two hundred and forty-six thyroid operations with a mortality in the whole group of 0.73 per cent.

The mortality in the patients with primary hyperthyroidism from 1926 to 1933 was

Total Cases	Total Operations	Total Deaths	Case Mortality %	Operative Mortality %
3,422	4,543	21	0.61	0.48

The mortality in the patients with toxic adenoma for these same years was

Total Cases	Total Operations	Total Deaths	Case Mortality %	Operative Mortality %
876	1,032	16	1.8	1.5

One can see from these figures that we have been able to maintain a very low mortality rate in true Graves' disease, exophthalmic goitre or primary hyperthyroidism. I am anxious, however, to point out that the mortality in toxic adenoma will always be a little higher than that of Graves' disease. This is not in my opinion due to the fact that hyperthyroidism associated with toxic adenoma is any more serious in itself but is due to the fact that toxic adenomata occur in more elderly individuals and, therefore, the operation is associated with more generalized damage such as cardiac, liver and kidney lesions.

In conclusion, I would like to say that thyroid surgery is not dangerous surgery when it is undertaken in organized groups. When, however, it is done as casual surgery, such as the surgery of hernia, fibroid, appendicitis and so forth and without organization for its management, the mortality will undoubtedly be high. The preparation of the cases, the type of anesthesia employed, the technical complications and the postoperative care are extremely important points, I believe, in keeping the mortality low in this group of cases and as demonstrated in the follow-up figures. I know of no operation in surgery in which relief is more striking and the end results more satisfactory.

MISCELLANY

VERMONT DEPARTMENT OF PUBLIC HEALTH

MARCH, 1934

Communicable diseases reported to this department during the month are as follows: chicken pox 88, diphtheria 4, measles 308, mumps 24, scarlet fever 68, typhoid fever 2, undulant fever 2, whooping cough 227 and tuberculosis 15.

The Laboratory of Hygiene made a total of 1,628 examinations in March, classified in the following manner:

Examinations for diphtheria bacilli	122
" " Widal Reaction of typhoid fever	31
" " undulant fever	25
" " gonococci in pus	141
" " tubercle bacilli	199
" " syphilis	504
" of water, chemical and bacteriological	41
" " water, bacteriological	210
" " milk, market	170
" " milk, submitted for chemical only	7
" " milk, submitted for microscopical only	95
" " milk, submitted by the Department of Agriculture	1
" " foods	10

Examinations for the courts (autopsies) ———	0
“ the courts (miscellaneous) ———	5
“ of animal heads for evidence	
of rabies ———	2
miscellaneous ———	60
Autopsies to complete death returns ———	3

Twenty cases of gonorrhea and twenty cases of syphilis were reported to the Division of Communicable Diseases. Four hundred and ninety Wassermann outfits and 380 gonorrheal slides were distributed by this division.

Sixty-five patients have been visited in March by the nurses of the Poliomyelitis After Care Division; eight doctors have been visited and seven social calls made. One patient was admitted to the Massachusetts General Hospital and one patient discharged from this hospital. One patient each has been discharged from the Children's Hospital and the Audubon Hospital in Boston. Fifteen pieces of

apparatus have been fitted, four pieces of apparatus repaired or altered and seventeen orthopedic corrections made to shoes. Sales made by the Vocational Worker amounted to \$16.41.

The State Advisory Nurse's time has been devoted to carrying on the CWA project for nurses. Eight hundred and fifty-seven pieces of literature and 102 notifications of births were sent out in March.

RECENT DEATH

ROGERS — VERN MOORE ROGERS, M.D., died September 18, 1933. He was born in Ashland, New Hampshire, January 25, 1867, and was graduated from the Medical College at the University of Vermont in 1897. Dr. Rogers was located in Quechee for a few years, practiced in Middlebury for about three years, after which he returned to Quechee where he practiced until his health failed in 1930.

AN EXTRACT FROM A LETTER OF SIR WILLIAM OSLER*

The letter closed with this charitable comment on the Semitic invasion of Berlin:

"The modern 'hep hep hep' shrieked in Berlin for some years past has by no means died out and to judge from the tone of several of the papers devoted to the Jewish question there are not wanting some who would gladly revert to the plan adopted on the Nile some thousands of years ago for solving the Malthusian problem of Semitic increase. Doubtless there were then as now, noisy agitators—prototypes of the Parson Stocker—who clamoured for the hard laws which ultimately prevailed and for the taskmasters whose example so many Gentile generations have willingly followed of demanding where they safely could bricks without straw of their Israelitish brethren. Should another Moses arise and preach a Semitic exodus from Germany and should he prevail, they would leave the land impoverished far more than was ancient Egypt by the loss of the 'Jewels of gold and jewels of silver' of which the people were 'spoiled.' To say nothing of the material wealth—enough to buy Palestine over and over again from the Turk—there is not a profession which would not suffer the serious loss of

many of its most brilliant ornaments and in none more so than in our own. I hope to be able to get the data with reference to the exact number of professors and docents of Hebrew extraction in the German Medical Faculties. The number is very great, and of those I know their positions have been won by hard and honourable work, but I fear that, as I hear has already been the case, the present agitation will help to make the attainment of university professorships additionally difficult. One cannot but notice here, in any assembly of doctors, the strong Semitic element at the local societies and at the German Congress of Physicians it was particularly noticeable, and the same holds good in any collection of students. All honour to them!"

A STUDY OF FAMILIES WITH CONGENITALLY MALFORMED MEMBERS

The Gynecean Hospital Institute of Gynecologic Research of the University of Pennsylvania is conducting an intensive study of families into which congenitally malformed individuals have been born.

Special interest centers in families in which malformations have appeared in two or more children. Physicians who have knowledge of any such families are urged to communicate with Dr. Douglas P. Murphy, Gynecean Hospital Institute, University of Pennsylvania, Philadelphia, Pa.

*This letter written by Sir William Osler while visiting in Germany in 1884 appears in *The Life of Sir William Osler* by Harvey Cushing, Volume I 214 1906.

PREVENTION OF LITIGATION REQUIRES EARLY AND THOROUGH EXAMINATION AND A CORRECT DIAGNOSIS

BY HENRY F STOLL, M D *

THERE is no question but that the rank and file of the medical profession look askance at medico-legal cases and there is ample justification for this feeling. Any doctor who has been baited, browbeaten and held up to ridicule by some clever attorney who demanded a "yes" or "no" answer to a preposterous question, has no desire to repeat the experience.

Moreover the conflicting testimony of so-called experts who specialize in the litigation field, sometimes makes one question the integrity of the witnesses. Nevertheless, the growth of accident insurance and the advent of compensation laws place an added responsibility upon all of us whether we like it or not.

Since the earliest times, the desire to get something for nothing has been universal but it has been more flagrant and unashamed since litigation appeared as an easy way to this end. Yet I am convinced that the majority of the litigants, who on careful investigation are found to have no justification for their claims, are honest in their contention.

It is not my intent to discuss the great variety of injuries and diseases that are attributable to industry, but it may be of interest and perhaps helpful to review some of the diagnostic problems that arose in a few cases. They illustrate that litigation with its attendant worry and expense, might often be avoided if the physician first consulted would take sufficient time to ascertain and record all the facts and thoroughly examine his patient.

CASE 1 H. G. L. aged 67, while driving his automobile had a head on collision with another car. The impact turned his car completely around though it did not upset. He was not conscious of being injured as he got out of the car unaided and went into his house nearby to phone for the sheriff. He worked a day or two after the accident, but almost none since. The natural inference that he had not worked as the result of the accident was found to be incorrect, the real reason being that he had finished the job he was working on and could not get another.

About a month after the accident, he had a drawing sensation in the region of his heart. Two or three months later he lost his appetite and developed nausea, and about six months after the accident, and five months before I saw him he became very weak and lost about 40 lbs in weight. He had never been constipated prior to seven months ago. I examined him eleven months after the accident at which time he honestly, and quite naturally, attributed his condition to the collision. He was alert, emotionally unstable and emaciated. Pulse 80, blood pressure 155/85, tenderness was quite marked over the epigastrium especially toward the right, where a sense of fullness was suggested.

I suspected that he had a carcinoma of the stomach, but a rectal examination revealed a hard cartilaginous mass just inside the anal sphincter. X-ray suggested a small duodenal ulcer and a filling defect of the rectosigmoidal juncture, thought to be caused by a neoplasm.

Comment Notwithstanding the fact that his symptoms were chiefly confined to the epigastric region, there was one symptom of great significance, especially in an elderly individual, that I at first overlooked. For the past several months he had been constipated. In every patient past middle life who notes a change in his bowel habit, either the development of diarrhea or constipation, a careful search for neoplasm of the large bowel should be made.

A strongly positive Wassermann reaction complicated the picture. Whether the rectal lesion was malignant or syphilitic, with secondary involvement of the liver, could not be determined, though the former seemed probable. There could be no causal connection between the development of the duodenal ulcer (if he had one) and the accident six months before.

Irrespective of the complaints or the social status of the patient, subsequent embarrassment is often avoided if a rectal examination and Wassermann test are routinely made.

CASE 2 T. K. aged 65, a buffer and grinder for 40 years could no longer work because of pain across his chest, lack of 'pep,' loss of weight and a cough of six months duration. Twice tuberculosis had been diagnosed and both times he was sent to a sanatorium, but soon discharged as having no active tuberculosis. Pneumoconiosis was then considered and he claimed compensation, asserting that his symptoms were due to the 40 years of grinding. A rather natural claim in view of his occupation. Further questioning, however, revealed that the pain across the front of the chest was gripping in character especially if he hurried. He also stated that he thought if he could get rid of the gripping he would also get rid of the cough which was especially bothersome at night.

Physical and roentgenological examination of the lungs revealed neither recent tuberculosis nor pneumoconiosis. The examination of the heart was likewise negative but, from the clinical picture, the diagnosis of arteriosclerotic heart disease was justified.

Comment Too little time had been spent in eliciting the patient's symptoms. Cough is often one of the earliest symptoms of a failing myocardium. "A grinder for 40 years" has an ominous sound but we have found that the use of emery and carborundum wheels when equipped with adequate exhaust systems, does not cause pneumoconiosis, whereas with the large silica wheel,—the so called "wet grinding" now rarely used—extensive involvement is frequent.

In all industrial cases, the actual working con-

*Stoll, Henry F.—Visiting Physician, Hartford Hospital.
For record and address of author see This Week's Issue
page 1034

ditions should be investigated. For instance, the roentgenograms of a molder who had tuberculosis strongly suggested a co existing pneumoconiosis. In addition to making the molds with moist sand and pouring the molten metal he also cleaned the castings. This would hardly seem to incriminate the occupation but on visiting the foundry, I learned that he sprinkled so-called "parting compound" on the mold before pouring as this made the separation easier. This preparation is almost pure silica. But of more importance was the method used in cleaning castings.

For the most part they were large pieces,—manhole covers, etc. They were placed on a low bench and the operator "scrubbed" them with a wire brush bending over so that his face was a couple of feet from the casting. The adherent sand had a high silica content and this must have been increased by the particles of "parting compound" that adhered to the metal. Obviously the amount inhaled must have been considerable.

CASE 3 C J aged 46 a night watchman for two and a half years in a typewriter factory could no longer work because of weakness. Benzol poisoning was alleged as one of the ingredients used in what is known as the japanning process. The manufactured articles, after being covered with the enameling solution were baked in kilns at high temperature. He had lost weight (40 lbs.), had numbness in fingers and legs, diarrhea and occasionally bright blood with the stool. It had been observed that his skin was yellow.

In addition to ringing the boxes and inspecting the clocks, he made regular inspections of the kilns. Varying amounts of gas and smoke were always evident about the kilns and this was occasionally so strong that his eyes would water and he would have to put his head out of the window to get his breath.

On examination a lemon yellow tint to the skin was evident. There was marked weakness in the legs so that he could not stand unaided. The tongue was very red and, along the edge seemed denuded of epithelium. Both knee reflexes and the right ankle reflex were absent.

An international authority on industrial diseases testified that the man was suffering from benzol poisoning and a claim for complete permanent disability was made yet in reality there was little to support this claim save the fact that he had a severe anemia and had passed a little bright blood with stool a few times. He had had no petechiae or real hemorrhages which are always present in benzol poisoning. The blood picture was definitely not that of aplastic anemia, such as occurs in benzol poisoning, but was typical of primary anemia. (Hb 40 RBC 2.3 WBC 5500. Red cells varied much in size hyperchromia was present and some specimens showed blasts.) Free HCL was not found in either of two examinations of gastric contents. moreover combined system disease so common in primary anemia, does not occur in benzol poisoning.

Comment The inhalation of gases and fumes is frequently the basis of a claim for disability, yet the most lethal gas (CO) is without odor while some with a disagreeable odor, as for example, banana oil, is harmless. The intermittent exposure to benzol fumes in the case of the

night watchman was much less than that experienced by the regular workmen in the plant and no case of benzol poisoning had developed during many years of operation.

CASE 4 W W aged 57, claimed compensation because of disability due to typhus fever. When admitted to the hospital he complained of pain in the region of the right shoulder accompanied by fever of three weeks duration. Tenderness was marked and motion was exceedingly painful. He gave a history of having strained his shoulder over six months before while loading railroad ties onto a freight car. The pain gradually subsided but, on the seventh day after admission to the hospital his temperature rose to 103.4° for one day. For a couple of days he was slightly drowsy. The spinal fluid pressure was normal there were ten cells and a slight globulin reaction. Wassermann was negative, colloidal gold, a slight rise in middle zone.

Greatly to everyone's surprise, a positive Weil-Felix reaction was obtained on the blood. Up to this time no one had considered the question of typhus fever. Further questioning developed the fact that while working at his trade as a carpenter, about a month before admission to the hospital, and just prior to the development of his symptoms, he was repairing an old house and opened up a large nest of bats that flew about his head. He reached in and with his bare hand removed a large amount of "bat wool." He was not conscious of being bitten by a bat, nor did he recall any insect bites. That night he had a sudden sharp pain in the back of his neck. He indicated the spinous process of the seventh cervical vertebra. The pain in the shoulder had been present since that time a period of about four weeks.

European typhus is due to the *Rickettsia prowazeki* and the vector is the human body louse. Examination of the patient, however, did not reveal any lice. Though the bats are reputed to harbor a variety of mites and parasitic flies they do not, so far as is known harbor human lice. In this country however, typhus fever is not transmitted by the body louse but by rats and conveyed to human beings by the rat flea. Unsuccessful attempts were made to capture rats in the vicinity of the old house where the man had worked.

X-ray examination of the right shoulder and spine showed evidence of chronic arthritic changes in the right acromioclavicular joint and advanced hypertrophic changes in the dorsal spine. The urine at all times showed a few pus cells and at the time of the second rise of temperature pus cells were reported as being present in clumps.

Comment Clinically, he had a typical acute, periarticular inflammatory process of the shoulder, probably with a complicating bursitis and pyelitis. The mental symptoms suggested a mild encephalitis.

It is quite likely that his work started up an old quiescent arthritis of the shoulder. In the effort to prove that the man was "bit by the louse that fell from the bat, that flew from the house that Jack built," the actual condition, that was probably compensable, was lost sight of and as a consequence, the case was thrown out of court. Valuable as laboratory tests are, one can sometimes be led very far astray unless they are considered in conjunction with the whole clinical picture.

CASE 5 C L., aged 66, sued a hotel proprietor for \$25,000 alleging an attack of ptomaine poisoning with subsequent injury to his heart, as the result of eating food served at the hotel.

The claimant, a retired merchant, spent the winter of 1931-1932 in Florida, returning the first of May. While there he played a great deal of golf and in fact, had been particularly active and in good health. On the morning of May 7, he breakfasted at 7:30 in New York City. He partook of no other food or drink until his luncheon which was eaten in Hartford shortly after three o'clock in company with his wife and two daughters. The question was raised as to the advisability of eating oysters, as it was the month of May. The claimant's luncheon consisted of raw oysters, soup, a piece of chicken with mushroom sauce and asparagus salad. One of the daughters ate the oysters, chicken, ice cream and coffee. His wife and other daughter did not eat the oysters, but the rest of the luncheon was the same.

The entire party was very hungry and the claimant had had nothing to eat for about eight hours. The food, including the oysters, looked to be good and tasted so. While waiting for the waiter to pass the menu for the dessert order, the claimant began to feel ill. He had a vague sickening feeling in the abdomen. He decided to eat no dessert and thought he would feel better if he got out into the air, so without saying anything to the family, arose and walked out of the dining room, through the lobby and out to his car standing near by. The chauffeur noticed nothing unusual in his appearance. He got his overcoat for him, helped him into it and the claimant got into the back seat unaided. While he was walking out from the dining room, however, he felt very weak and had to "push himself" and he was somewhat unsteady. Almost immediately after getting into the car, the chauffeur heard a peculiar noise and turned around to see him vomiting profusely and for a moment he appeared to be unconscious. His breath came in short gasps and his face appeared to be swollen. The unconsciousness was only momentary.

The other members of the family came out after finishing their luncheon, in perhaps fifteen to twenty minutes. He presented a ghastly color and refusing their advice to summon a physician, immediately started for his home in Springfield. On the way he was nauseated, but did not vomit. He got out of the car at his home unaided, walked upstairs without assistance, to his room and dropped upon the bed. He did not know anything thereafter until he regained consciousness several hours later when he saw a nurse, two doctors and a priest in the room. He remained in bed for four weeks because of weakness. At no time did he suffer from pain, vomiting or diarrhea. His recovery was despaired of when he was first seen. He was very slow to regain his strength and has had to limit his activities greatly since then because of shortness of breath and of discomfort in the left side of the chest on exertion.

At the time of my examination, seven months later, the heart was apparently enlarged slightly to the left, the sounds were faint and there was a soft systolic murmur following the first sound. Pulse 92, blood pressure 150/75. The examination was otherwise negative.

Comment The claimant was very hungry at the time of the luncheon and ate heartily and within fifteen to twenty minutes after beginning the meal he began to feel ill, "a great weakness", he called it. He suffered from no pain, walked a considerable distance, became momen-

tarily unconscious, vomited profusely but after the initial vomiting there were no gastrointestinal symptoms whatsoever, except for an attempt to vomit on the journey to Springfield.

Food poisoning of any sort could be absolutely ruled out as the time between the ingestion of food and development of symptoms was too short.

During the past few years it has become more and more evident that individuals, especially past middle life, apparently in the best of health who are seized with so-called acute indigestion, usually have an occlusion of a cardiac vessel. This has repeatedly been proved at autopsy and while there is usually pain, which is almost always intense, it is not uncommon for pain to be entirely absent. An overwhelming sense of weakness, accompanied by sweating, appears to be the pain equivalent in this case.

The attacks of coronary occlusion occur so frequently in individuals who are feeling perfectly well, just after or while eating a hearty meal, that it would seem as though there was some connection between the ingestion of food and the attack. One may assume that the coronary circulation is already impaired, due to vascular sclerosis, and that possibly the engorgement of the blood vessels of the gastrointestinal tract, as the result of the ingestion of food, is sufficient to lower the blood pressure in the already sluggish coronary circulation enough to cause thrombosis. The distention of the stomach, with the change in position of the heart, may contribute to this.

When vomiting follows the attack as it often does, it almost invariably brings temporary relief from the pain even though there is no food in the stomach and this naturally suggests the diagnosis of acute indigestion. The relief will usually last only a few moments, but is repeated with each succeeding attack of vomiting. It would seem as if the rise in blood pressure coincident to the strain of vomiting were sufficient to force enough blood through the small collateral vessels to momentarily overcome the muscle anoxemia.

The case here reported was won by the defendant on a point of law, not of fact as to what caused the sickness. The lower court ruled and was sustained by the higher tribunal, that the hotel sells service—not food and consequently does not guarantee its purity.

CONCLUSION The physician first consulted after an alleged injury has a great responsibility. If he fails to get a complete description of all the details that precede as well as follow the incident, if he neglects to examine the patient with meticulous care, if he makes a thoughtless remark or comment, great harm may result. The fear that a serious condition has arisen, the hope that financial security may be achieved, and the months of uncertainty while the wheels of the law slowly revolve, have wrecked many an individual past any possibility of salvage.

ACROMIOCLAVICULAR DISLOCATION AND ITS REPAIR

BY FREDERIC J. COTTON, M.D.,* AND GORDON M. MORRISON, M.D.*

THE understanding of this dislocation, appreciation of its seriousness, and of the various problems offered in the handling of the injury, have not been helped by the confusion between two lesions different enough to be classed entirely apart.

The common lesion, occurring usually from falls on the shoulder, common on the football field for instance, involves nothing beyond tearing of the ligaments directly connecting the clavicle and the acromion.

Sometimes there is a crumpling fracture of the outer end of the clavicle, but not often. There is a little upward displacement of the upper end of the clavicle, usually only a half an inch or so. Unless there is much muscle spasm this displacement is reducible by shoving the arm upward, particularly with the patient on his back.

Treatment with any sling or apparatus to hold the whole arm up beyond the ordinary carrying point, brings about prompt healing of ligaments with displacement nearly enough abolished to leave no measurable disability as a rule.

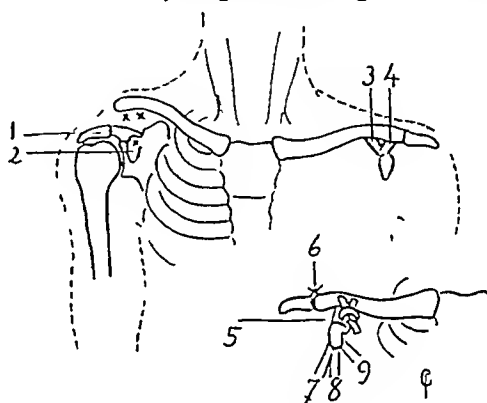
Rarely it may seem advisable to suture the ligaments or to reeve a fascial strip through the bones across the joint. This lesion is really hardly important.

The other lesion, from like violence but of severer force, involves not only a tearing of the ligaments about the joint, but also of the massive conoid and trapezoid ligaments holding the clavicle to the coracoid process of the scapula. Such a tear may be so complete as to allow a direct displacement of the outer end of the clavicle upward. In two such cases, rather neglected, I have seen such displacement of at least two to three inches. Ordinarily it is less, but very definitely more than in the lesion first described. The bone-end may be replaced but not easily, and is hard to hold. Such an injury is serious. Mere confinement after reduction is entirely inadequate treatment. Even operation at the joint is a waste of time.

Radical operation is the only cure. Various lashings have been used, but to day one would use only fascia. The only reliable treatment is an operation of obvious mechanics, but one I think not often done. The incision runs from the pectoral insertion on the humerus up to and a bit beyond the clavicle, crossing about an inch and a half inside the outer end. This incision opens directly onto the interval between the deltoid and the so-called clavicular portion of the pectoralis major. Here lies the cephalic vein.

Blunt dissection separates the muscles. The vein is carried outward, occasional ties may be needed.

High up in the space the coracoid process presents an obvious hook. From it arise the tendons of origin of the pectoralis minor and the short head of the biceps. Blunt dissection opens up room behind them thereby permitting a circling of the coracoid hook. Directly above this point the clavicle, here broadened out is drilled through but not encircled. It is drilled from above downward, a spatula being held beneath



ACROMIOCLAVICULAR LUXATION

- 1 Acromion.
- 2 Coracoid.
- xxx Torn ends of ligaments on clavicle and on coracoid process
- 3 Conoid ligament with normal attachments
- 4 Trapezoid ligament with normal attachments
- 5 The knotted fascial band through clavicle around coracoid, back of the attachments of origin of the muscles
- 6 Direct suture of torn acromioclavicular ligaments.
- 7 8 and 9 The short head of the biceps the coracobrachialis the lesser pectoral at their origins

it, to guard against any slip. The hole is enlarged to a quarter or even a third of an inch.

The fascia a long and very strong strip is obtained from the fascia lata in the usual way, cleaned, rolled up to a cord, passed down through the clavicle under the coracoid from within outward (behind the tendons so it cannot slip off) brought up and forward, tied in a square knot with the free end lying in front just below the clavicle. The knot is caught with stitches of chromic gut or silk as usual. Next comes the repair of the acromioclavicular ligaments, probably not very important. After this operation, firm sling support is needed for at least six weeks.

As in all surgery with fascial sutures, there is presently some slack, no matter how tight the fascia is drawn, and how firmly knotted. I have done this operation on about six cases. In all that I have done or observed, thus operated on, the results have been mechanically competent and clinically good. And this applies to several cases operated some weeks after injury.

CASE RECORDS of the MASSACHUSETTS GENERAL HOSPITAL

ANTE MORTEM AND POST MORTEM RECORDS AS USED
IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES

EDITED BY RICHARD C CABOT, M.D.
F M PAINTER, A.B., ASSISTANT EDITOR

CASE 20191

PRESENTATION OF CASE

First admission A married American housewife of forty-two entered on the Neurological Service for the first time complaining of headaches of a year's duration

A year before admission she began to suffer from severe frontal headaches which occurred on an average of three times a week. They were not accompanied by nausea or vertigo, but were sufficiently severe to make her lie down. At about the time of their onset her physician noticed a tumor in her abdomen, but did not recommend any treatment for it. At the same time she noticed a lengthening of her menstrual periods from her usual three and a half days to eight days. The headaches became gradually more frequent until they occurred daily. They did not change in character. Five months before her entry to this hospital she awoke one morning with blurred vision and an exceptionally severe headache. She entered another hospital, where three lumbar punctures were done with temporary relief of the headache. X-ray studies were made and abscesses about the teeth found. Six teeth were removed. While in the hospital she had severe earaches, but no operation was done on her ears.

Her family history shows that her father was living and well at seventy-five. Her mother died at sixty-three of cerebral hemorrhage. The patient had been married twenty-one years. Her husband was living and well. She had one son, aged nineteen. She had a single miscarriage at the age of thirty.

She had been told that she had malaria from the age of three to six. She had the usual childhood diseases, and also had diphtheria in childhood. She had been constipated all her life, being accustomed to taking cathartics daily.

Physical examination showed a well nourished, rather pale woman with a moderate upper dorsal kyphosis. The heart measurements were within normal limits. The blood pressure was 124/74. The chest was negative. A firm, hard, smooth, non-movable, slightly tender tumor about the size of a pear was felt in the epigastrium, pulsating up and down but not laterally. On auscultation over it a systolic bruit could be heard. The liver edge was barely

palpable and slightly tender. Pelvic examination showed a tumor the size of a grapefruit which appeared to move with the cervix. Neurologic examination was negative.

She was afebrile. Her pulse averaged 80 and her respirations 20.

Laboratory examination showed a red blood cell count of 4,120,000, a hemoglobin of 55 per cent, a white cell count of 4,600. The urine showed a specific gravity of 1.012 with no albumin, no sugar, and a negative sediment. The non-protein nitrogen was 24 milligrams. Examination of the colon by barium enema was negative.

A lumbar puncture gave 13 cubic centimeters of clear colorless fluid with an initial pressure of 170. The dynamics were normal. Alcohol and ammonium sulphate tests were negative. Thirty-nine crenated red cells were observed. The Wassermann and colloidal gold were negative.

She was transferred to the Surgical Service, where a dilatation and curettage with an implantation of radium was done under avertin anesthesia. At this time the cervix was found to be smooth and normal in size. The uterus above it was definitely enlarged and somewhat irregular. No masses could be made out in either vault. The cervix dilated easily. The uterine cavity measured four inches in depth. With the curet a localized hump could be made out on the posterior wall. Several smaller nodular irregularities were felt on other portions of the wall. The curettage produced only a small amount of grossly and histologically normal endometrium. Two hundred and thirty-five milligrams of radium were inserted for six and a half hours. Three days later she was discharged with advice to continue under observation with a view to hysterectomy if the bleeding did recur.

History of interval Following her discharge her headaches continued on an average of three days out of every week. The pain was now described as most severe in the occipital rather than the frontal region. There was general relief at the times of the menstrual periods. She took the iron prescribed for her anemia faithfully and adhered to the other dietary requirements advised. Her color improved and she gained thirteen and a half pounds in weight. Her menstrual periods continued in spite of the radium treatment. Until the last one before her reentry, however, the flow was relatively scant in amount. Four days before her reentry she suddenly passed a large amount of bright red blood and numerous clots. The following day this stopped. The day before entry she had another severe hemorrhage, but without further clots.

Second admission, nine months after her previous discharge

Physical examination at this time was unchanged from the preceding entry. On pelvic examination a slight flow of blood from the external os was noted. The fundus was found to extend three fingerbreadths above the symphysis and seemed about the size of a small orange. The vaults were negative except for marked tenderness on the left.

Her hemoglobin on this occasion was 80 per cent. The red cell count was 4,430,000.

Three days after entry operation was done, a supravaginal hysterectomy, bilateral salpingo-oophorectomy and appendectomy. Following the operation she had persistent vomiting for three days. On the fifth day after operation at about midnight she suddenly complained of sharp severe epigastric pain. There were at the time no other symptoms. The pain was relieved by a grain of codein followed by one sixth of a grain of morphine. At seven o'clock the following morning the patient became suddenly dyspneic and cyanotic and collapsed. When seen by the doctor she was lying in bed showing marked air hunger. Cyanosis was extreme. The extremities were somewhat cold. She was rational and talked intelligently. At this time she had no chest pain. The abdomen appeared distended. No peristalsis could be heard. The veins were not distended. The blood pressure and pulse gradually became imperceptible. The patient became comatose and died fifty-five minutes after the onset of the final collapse.

DIFFERENTIAL DIAGNOSIS

DR JAMES C WHITE. On thinking about this patient perhaps the first question to clear up is the matter of these headaches. I should say that they were not typical of migraine. She had blurred vision on only one occasion. The pain shifted from the frontal to the occipital region at the second admission. Could they have been due to any cerebral lesion? I feel that with the negative neurological examination and the relatively normal spinal fluid findings the chances of definite pathology in the brain should be fairly slight. Perhaps the anemia resulting from her uterine bleeding is an adequate explanation of her headaches.

Next we have the problem of the pelvic tumor. I think we must discount the epigastric tumor, because they would have had a chance to feel it at operation, and it was never mentioned except at the first admission on the medical ward. She had, as I gather, an enlarged uterus rather than an ovarian tumor. At the dilatation and curettage they found definite irregularity in the inside of the uterus, in fact a number of irregularities. They found a normal endometrium. If she had had a Shaw type of tumor of the ovary causing bleeding she should have shown hyperplasia of the endometrium. If she had had carcinoma of the uterus they certainly

ought to have been able to find it with the curettage. Every now and then, however, a small area of carcinoma can be overlooked, so that this possibility must still be considered with the subsequent course of this patient.

She was given 1500 millicuries radiation. Of course she was so anemic that they were unwilling to do the more usual type of hysterectomy. I should like to know in connection with radiation in what percentage of cases that dosage should cause cessation of ovarian function. I should like to ask Dr Leland if he feels that this amount of radiation would definitely stop the function of the ovary.

DR GEORGE A LELAND, JR. In a large proportion of the cases, yes, but not in one hundred per cent if you are dealing with ovarian function alone.

DR WHITE. If you said ovarian function could always be counted on to stop after this degree of radiation, then we should have to fall back on malignant tumor as the cause of her continued bleeding. The most usual type of neoplasm would be carcinoma, but this would probably have been discovered on curettage. Occasionally sarcoma will cause bleeding, and sometimes sarcoma is associated with fibroids. I think that is still a possibility to be considered. On the law of chances, however, I should say she had fibroid tumors of the uterus and the radiation did not completely stop ovarian function, that she may have had a partial breaking down of one of the tumors without complete destruction, and that this was causing symptoms at the second admission. If she had had any malignant tumor you would not expect her to gain fifteen pounds, nor would it be likely that her hemoglobin and red cell count should return to almost their normal levels.

Operation was done. The removal of the uterus with both tubes and the appendix would be compatible either with fibroids or malignant tumor, so we cannot tell by that what the surgeon found.

The final question comes down to this: why did she collapse on the fifth day after operation? She had a stormy postoperative course. After radiation and the findings that were described it would be very likely that she developed peritonitis after operation. Her symptoms of collapse however are perfectly typical of pulmonary embolism. She became cyanotic, developed severe dyspnea, and her extremities became cold, as is commonly the case in extreme circulatory failure. These observations are certainly suggestive of pulmonary embolus. The fact that she had no pain in the chest would also be perfectly compatible with this diagnosis.

I should like to ask Dr Boyden about her veins. We are told that the veins were not distended. Does that mean the leg veins or the neck and arm veins?

DR A M BOYDEN. I did not see her at that

time, but the note that appears in the record was that the veins were not distended

DR TRACY B MALLORY I think it is fair to presume it means the neck and arm veins, because statements as to distention of the neck veins and regarding cyanosis appear in every history where there is any question of pulmonary embolus

DR WHITE I think that this is the one vital and essential sign This patient was alive for almost an hour and they had plenty of time to observe it With complete shutting down of circulation in the pulmonary artery and dyspnea you must get distention of the right side of the heart If you fail to detect distention of the large veins in the neck, you cannot logically make a certain diagnosis of pulmonary embolus, even though the other findings are typical You do not often get it in cardiac infarction, but this woman is too young for coronary occlusion The fact that she had abdominal distention and absent peristalsis makes me feel that her death was due to a fulminating peritonitis

CLINICAL DISCUSSION

DR REGINALD H SMITHWICK This patient had multiple fibroids of the uterus and was operated on under general anesthesia While she was receiving the ether she had some sort of circulatory collapse in the etherizing room Her pulse became very rapid and feeble and her blood pressure dropped from about 120 to 70 or 80 There was some question as to whether we should go ahead and do the operation or not She was given a slow intravenous infusion and seemed to improve rapidly, although that fact is rather disconcerting

On opening the peritoneal cavity we found that it contained a large quantity of fresh blood, bright and not clotted On rapid exploration of the pelvis the right tube was found to be distended with clotted blood The appendix was adherent to the right tube and was separated with a little difficulty On quick observation it looked as though she might have had an extrauterine pregnancy, particularly as the radium had never stopped her periods At any rate she was in poor condition A rapid hysterectomy was done, removing both tubes and ovaries and incidentally her appendix, which of course one would not be particularly anxious to do under the circumstances except that being involved with the right tube and ovary it seemed a little wiser to take it out than not Because of her poor condition no attempt was made to remove all the fluid blood and the wound was closed undoubtedly with a large quantity of free blood

Her postoperative course was similar to that which is very frequently seen with ectopic pregnancies where not all of the blood is removed at the time of operation because of the condition of the patient and the fact that you do not

want to handle the intestines too much She had a little more temperature after operation than she should have had, but that subsided, and by the third or fourth day we were no longer concerned about her abdomen

Then the sudden episode happened during the night I did not see her She died at about 7 45 in the morning, very suddenly, apparently having a good deal of pain during the night which was not relieved by the medication, as I understand the story I believe that more emphasis should be placed on difficulty in breathing and cyanosis, which I understand from talking with some who saw her were present from the time of the episode about midnight Also I think Dr White has been misled by the statement that the veins were not distended I did not see her until after she had died and the neck veins were distended very definitely It seemed to me from the reports over the telephone and on looking at her after she had died that she died a perfectly classical and typical death of pulmonary embolism

DR LELAND In listening to the discussion and the description of this case I noted several very interesting points that may well be discussed. I will mention three of them

In the first place the question of radium and fibroids,—what radium may be expected to do and what it was expected to do in this particular case I was on duty at the time this patient was in the neurologic ward I saw the patient in consultation and felt definitely that with a hemoglobin of 55 per cent surgery should not be attempted I do not believe it is justifiable to subject a woman to a hysterectomy, either supravaginal or complete, with a hemoglobin below 60 When the cause of hemorrhage is benign, radium may suffice to obviate that hysterectomy, or failing in that will act as a hemostatic sufficiently to permit the patient to build up the hemoglobin In fibroids of the uterus it is not anticipated that radium will always stop the bleeding In a submucous fibroid it is never expected that radium will stop the bleeding Apparently that was just the situation in this case The surgeon who did the curettage found irregularities in the endometrial canal which were interpreted by him as submucous fibroids

As regards the dose of radium, 1500 millicuries is sufficient in we will say eighty-five per cent of the cases of fibroids at this age to bring about the menopause, but it is not sufficient in ninety-five or ninety-seven per cent, in which a dose of 2500 millicurie hours is required I think men who use the lower dose—and there are justifiable reasons why they do use that lower dose—must bear in mind the necessity of a repetition of that dose

In this particular case, as soon as the submucous fibroids were found an attempt was made

to get the patient into shape for hysterectomy

The second point was this intraperitoneal hemorrhage, which naturally enough was supposed to be due to an extrauterine pregnancy, although the surgeon must have given some thought to the question of pregnancy following the use of radium. The history shows us that no evidence of extrauterine pregnancy was found. I wonder how we can account for that bleeding. We know that the uterus still bled, and we know that radium has a certain stenosing effect upon the uterus. I offer as a possible explanation that a portion of the uterine bleeding came out through the tube instead of through the external os due perhaps to a submucous tumor so placed that a partial atresia of the uterus prevented the bleeding from coming down through the cervical canal.

As regards the final point, the cause of death, certainly the immediate rise in temperature, the vomiting and the evidence of diminution in peristalsis all lead one to suspect peritonitis. On the other hand we have the evidence of the physician in charge that on the third day the condition of the abdomen failed to give any concern. In these cases one must always bear in mind the possibility of phlebitis of the ovarian plexus. Such a phlebitis may occur with or without a local pelvic peritonitis and is not infrequently the cause of death by pulmonary embolus. I am inclined to reconstruct the immediate cause of death in this fashion, that there was a local pelvic peritonitis—it is unusual not to find it with such an amount of bleeding—with free blood present at the time of operation, that there was a phlebitis of the ovarian plexus, and that the final termination was due not to spreading peritonitis but to a pulmonary embolus from that ovarian plexus and phlebitis.

CLINICAL DIAGNOSES

Leiomyoma uteri
Intraperitoneal hemorrhage?
Coronary thrombosis?

ANATOMIC DIAGNOSES

Operative wound supravaginal hysterectomy,
bilateral oophorectomy and salpingec-
tomy, appendectomy
Pulmonary embolism
Hemoperitoneum
Pelvic peritonitis
Double ureter, right

PATHOLOGIC DISCUSSION

DR TRACY B MALLORY The surgical speci-
men which was removed at the hysterectomy
showed an enlarged uterus with multiple sub-
mucous fibroids, as had been suspected from the
time of the first curettage. The tube which was

seen at the time of operation and thought to be
a ruptured ectopic was considerably dilated and
filled with blood. Microscopically this and the
other tube showed a very slight degree of lym-
phocytic infiltration but no very significant
degree of chronic salpingitis, no evidence what-
ever of any decidual reaction and nothing to
suggest placentation or embryo formation, so
that I think we are reasonably safe in ruling
out ectopic gestation.

As Dr Leland suggests a hemorrhage from
the uterus through a patent tube seems reason-
able. According to Sampson's many articles
it is common to find during the menstrual periods
a certain amount of oozing through the tubes
if an exploratory laparotomy is done at that
time, and in the case of very severe uterine
hemorrhage such as this woman had it might be
possible for a very significant amount of blood
to pass through the tube into the pelvis.

There was a small paraovarian cyst.

The autopsy showed a very considerable
amount of blood in the pelvis and there was no
question that this blood was infected because
the pelvic contents had a distinctly foul odor
and were slightly purulent in character. There
was however no generalized peritonitis. The
immediate terminal event was a pulmonary em-
bolism, in all probability from the pelvic veins,
since the iliac and femoral veins were entirely
free. An incidental finding was a double ureter
on the right.

I think Dr White was at a disadvantage
working simply from the record, because that
statement as to the lack of distention of the neck
veins was probably made at an early period of
observation. Very possibly a change was made
and there was no note at any subsequent time.
I agree with Dr Smithwick that after death the
veins were definitely distended, but I believe
that can occur postmortem.

DR WHITE I think we have to go on that—
we simply cannot make a diagnosis of pulmonary
embolism in the case of a patient who lived as
long as she did unless these veins are distended.

DR MALLORY There was some doubt be-
cause the diagnosis sent down from the ward was
coronary thrombosis rather than pulmonary
embolus. So I think the distention was not an
important feature of the case at any rate.

A PHYSICIAN Where was the pulmonary
embolus?

DR MALLORY Lying in the pulmonary artery
just at the bifurcation—a very sizable one.

CASE 20192

PRESENTATION OF CASE

A seventy-six year old unemployed Negro
entered complaining of acute retention of urine
of five days' duration.

For a period of somewhat over a year he had
had mild symptoms of urinary obstruction—

frequency, nocturia, slowness of the stream and some difficulty in starting the stream. He had never noted hematuria or pain. Five days before entry he suddenly developed complete retention, requiring catheterization by his physician. Repeated catheterization was necessary during the subsequent four days. On one occasion this produced slight bleeding.

His past history included an attack of rheumatism thirty years before entry characterized by swollen wrists and ankles. For thirty years he had noted edema of the ankles. Four or five years before entry he had been told that he had heart trouble. For two years he had had slight dyspnea on exertion and had noted occasional dull precordial aching. He had been operated on for a hydrocele. He denied venereal disease.

His wife was dead. He had two children who were living and well. There had been no miscarriages or stillbirths.

No family history could be obtained.

Physical examination showed a well-developed man. The heart was enlarged. A powerful apex impulse could be seen and felt in the sixth interspace two centimeters beyond the mid-clavicular line. Obscuring the first sound there was a long rough systolic murmur which could be heard all over the precordium. In the aortic area a soft short diastolic murmur was heard which was transmitted down both the right and left sides of the sternum. There is no note as to a thrill. The aortic second sound was greater than the pulmonic. The blood pressure was 150/60. The pulse was regular, the rate 60 to 70. The lungs showed a few moist râles at both bases. The abdomen was distended on admission. There was a large area of suprapubic dullness and the bladder could readily be palpated. Rectal examination showed a prostate enlarged to the size of a large orange, smooth, symmetrical, non-tender. There was bilateral pitting edema of both ankles.

The temperature ranged from 98° to 100°, the pulse from 60 to 80, the respirations from 20 to 25.

The only laboratory work recorded is a single urine examination showing a gravity of 1.010 and the slightest possible trace of albumin. The sediment showed occasional white cells and 8 to 10 red cells. The non-protein nitrogen was 38. The Hinton test was negative.

The patient was placed on constant drainage. Two days after entry a bilateral vasectomy was done.

X-ray examination two days later showed both lung fields clear. The outline, position and respiratory movements of the diaphragm were normal. The heart lay rather horizontal in the chest and was considerably increased in the transverse diameter. The curve of the left ventricle was prominent. The apex was blunted. There was marked increase in the supracardiac shadow due to tortuosity and dilatation of the aorta, the tortuosity being regarded as extreme. Plates

of the pelvis showed proliferative changes about the bodies of the vertebrae and also at the points of attachment of several muscle tendons. Several round dense shadows were noted in the pelvis and were regarded as phleboliths. After the dye had been given the kidney pelvis failed to fill completely, but as far as made out were not abnormal. The ureters also appeared normal.

On the morning of the sixth day after entry the patient was up and about feeling very well. He went to the bathroom, where he collapsed suddenly, was found unconscious, and was brought back to his bed. He did not appear cyanotic. The veins were not distended. The pulse was fairly strong, the rate 90. The respirations were irregular. He remained unconscious and died in about five minutes, the respirations continuing for several seconds after the heart had stopped beating.

X-RAY INTERPRETATION

DR AUBREY O HAMPTON. This supracardiac shadow is very wide in the anteroposterior view, but if you rotate the patient the shadow almost disappears. That finding is fairly characteristic of extreme tortuosity of the aorta without much dilatation. It does measure 5 centimeters at the arch and it ought to be 3.5 to 4 centimeters, so that there is probably slight diffuse dilatation without obvious aneurysm.

The heart is of the left ventricular hypertrophy type that we see with aortic valve lesions or hypertension.

That is all, except some pleural reaction.

DIFFERENTIAL DIAGNOSIS

DR WILLIAM B BREED. I will not consider the genito-urinary aspect of this case, but will try to divide this second part of the story into two phases. It is interesting to consider first what the underlying cardiac pathology is and later to consider what was the cause of his sudden death.

There are some interesting statements, for one, the attack of so-called rheumatism at the age of forty-six. Rheumatic fever is not common at that age, and the incidence of heart disease following rheumatic fever at that age is low. He also stated that he had edema of his ankles for twenty-eight years before he began to have other symptoms of cardiac failure. I can not explain that on the basis of cardiac disease. He may have had varicose veins.

The physical examination indicates a very large heart. It shows a long rough systolic murmur obscuring the first sound and heard all over the precordium, also an aortic diastolic murmur. He may have had mild rheumatic heart disease with mitral involvement and aortic regurgitation. We may find that there is some rheumatic pathology, but I should think from the story and the x-ray evidence most of his trouble was arteriosclerotic in origin. It is pos-

sible that if they had focused their attention on the aortic valve they might have found some calcification there by x-ray. So I should say that we shall find chiefly arteriosclerotic heart disease with dilatation of the aortic ring as a background.

What was the cause of his death? I think that cerebral hemorrhage or other process in the head is most unlikely because of the suddenness with which he died. I am not considering that seriously. One is tempted to lay a good deal of emphasis on the possibility of pulmonary infarct, since the attack was postoperative. We are told definitely here again, however, that he did not appear cyanotic, the neck veins were not distended, and he did live for five minutes with a strong pulse and a rate of 90. He may have had a pulmonary embolus, but I am against it.

It is purely a guess as to other possibilities. I think there are two main ones, namely coronary occlusion and dissecting aneurysm of the aorta.

One thing in favor of dissecting aneurysm is the extreme degree of arteriosclerosis with a defect of the aortic valve to the point of giving him aortic regurgitation. It is rather intriguing to make an antemortem diagnosis of dissecting aneurysm. I have never done it. I think it is not done very often. Most cases of dissecting aneurysm have been associated with aortic regurgitation.

If coronary occlusion were severe enough to kill him in five minutes one would not expect to have a fairly strong pulse with a rate of 90 directly after his accident. As I said however, I think it is purely guesswork as to whether he had coronary occlusion or a dissecting aneurysm. Just as a sporting chance I am in favor of dissecting aneurysm.

DR FLETCHER H COLBY: There is not much more to be said about the genito-urinary aspect of this case than Dr Breed has said, except this, that this patient was a colored man of seventy-six. The colored race shows the largest prostates that we see. Sometimes they are huge in size. Uniformly these patients do not do well from operation or even in the preoperative course. There are several reasons for that. The first is of course sepsis. It is extremely common and practically universal in these patients who have been carrying a residual for some time and have been catheterized with a certain amount of trauma. When they come here they are likely to be put on constant drainage either by using catheters in the urethra or by an immediate cystotomy done to drain the bladder suprapubically. The presence of an indwelling catheter always produces a certain amount of infection. Most of these patients are elderly men and are able to take care of that type of infection. The prostate in this patient was described as being the size of an orange. Along with that one expects an engorgement of the periprostatic plexus

of veins. That added to sepsis very often results in a phlebitis of these veins with an extension into the pelvic veins. It is not uncommon at all for such a patient to have pulmonary embolism even though no major operative procedure has been done. I think I remember the cause of death in this case, so it is a little unfair to say that I suspect pulmonary embolism. Certainly the course of events was much more as Dr Breed described it and the death may have been due to coronary occlusion or heart failure of some sort, but it would not be unusual for such a patient as this who is put on constant drainage to have pelvic phlebitis followed by embolism.

A PHYSICIAN: May I ask what type of anesthesia was used in doing the operation?

DR COLBY: The vasectomy was done under local anesthesia.

DR J H MEANS: May I mention a colored man who died suddenly? He was not so old as this patient,—in his early fifties. He had worked for me for a number of years. I never had anything to do with his medical care. Apparently he was in perfect health until one day when he went home saying he did not feel well, he went to the toilet and dropped dead. I was interested in learning from the medical examiner's report that all they could find was arteriosclerotic heart disease and a wet brain. I do not understand why these conditions should kill him, nor do I understand what the relationship was. The situation was something like this one.

DR TRACY B MALLORY: One certainly sees a certain number of anginal cases in which death is nearly instantaneous and in nearly all these cases one fails to find a thrombus in the coronary artery, although there is always narrowing and arteriosclerosis.

DR MEANS: Do you usually find a wet brain?

DR MALLORY: I have not noticed it in two such cases that I have examined.

CLINICAL DIAGNOSES

Obstruction of the prostate
Arteriosclerotic heart disease with aortic regurgitation

ANATOMIC DIAGNOSES

Prostatic hyperplasia
Operative wound, bilateral vasectomy
Pulmonary embolism
Arteriosclerosis, splenic and renal
Cardiac hypertrophy, hypertensive type
Chronic endocarditis, aortic, with calcification
Pulmonary emphysema
Cortical cysts of the kidneys

PATHOLOGIC DISCUSSION

DR MALLORY: The anatomic findings in this

frequency, nocturia, slowness of the stream and some difficulty in starting the stream. He had never noted hematuria or pain. Five days before entry he suddenly developed complete retention, requiring catheterization by his physician. Repeated catheterization was necessary during the subsequent four days. On one occasion this produced slight bleeding.

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The New England Journal of Medicine

SUCCESSOR TO
THE BOSTON MEDICAL AND SURGICAL JOURNAL
Established in 1828

Published by THE MASSACHUSETTS MEDICAL SOCIETY
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SUBSCRIPTION TERMS \$6.00 per year in advance postage paid
for the United States Canada \$7.04 per year \$8.52 per year
for all foreign countries belonging to the Postal Union

Material for early publication should be received not later
than noon on Saturday. Orders for reprints must be sent to
the Journal office 8 The Fenway

The Journal does not hold itself responsible for statements
made by any contributor

Communications should be addressed to The New England
Journal of Medicine 8 The Fenway Boston Mass

The Massachusetts Medical Society

THE ANNUAL MEETING

PLANS for the approaching meeting of the Massachusetts Medical Society in Worcester are now nearing completion. The meeting will be held June 4, 5, and 6 in the Hotel Bancroft, and the Chamber of Commerce Hall, which is under the same roof. The detailed program will be published in the May 17th issue of the *Journal*, but certain features of the arrangements are of sufficient general interest to warrant editorial comment.

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WILLIAM HENRY WELCH (1850-1934)

THE death of Dr. Welch, "Popsy" to a legion of endeared friends, brings to an end a life so full so gloriously rich in all those qualities of mind and hand, that his passing, sad as it is, seems but an incident in the career of one who lived through an age of great development in medicine, not a little of which was of his own making. To have seen the very beginnings of modern pathology and bacteriology and to have been privileged to bring these gifts to America at a time when enthusiastic colleagues helped in their development, to have found friends and money to inaugurate a great medical school and later a school of public health and an equally eminent one of the history of medicine, were the gifts from the gods to a worthy son. The genius of Welch flowered under such inspiring and nourishing influences. The results of the meeting of a man, opportunities and the divine inspiration were never better exemplified.

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case were a fairly marked degree of arteriosclerosis and a calcified aortic valve with definite stenosis and undoubtedly some degree of regurgitation. The coronary arteries were in relatively good shape. The immediate cause of death was a pulmonary embolism which I think undoubtedly came from the periprostatic plexus of veins, which has been a very frequent source of pulmonary emboli in our material. We have had at this hospital one fatal case in which the operation was simply the crushing of a bladder stone through a cystoscope, no other operative procedure at all, and the patient died within four or five days with embolus.

A PHYSICIAN The death was sudden, was there no distention and cyanosis because of that?

DR MALLORY I can only say that there is frequently no mention of cyanosis in these case histories.

DR HOWARD B SPRAGUE Were the aortic cusps rigid?

DR MALLORY Not entirely. The calcification was mostly at the base, there was still a little freedom at the margins.

A PHYSICIAN The note was that the aortic second sound was louder than the pulmonic second.

DR MALLORY Yes, that is distinctly unusual, is it not?

DR SPRAGUE Yes.

DR MALLORY The calcification was not so extreme as in many of the cases we have seen here.

DR HAMPTON We have been seeing aortic valve calcification in ordinary films now that we know what to look for, but we could not see it in this case. I am sure that careful fluoroscopy would have revealed the calcification, however.

DR SPRAGUE Is there no evidence that this was a rheumatic process on the aortic valve?

DR MALLORY That is always difficult to tell. We have a rheumatic history, and I have seen a rheumatic history in four or five of these cases of aortic stenosis in elderly people. His mitral valve was absolutely negative. One must assume either that rheumatic fever occurring in an

older age group has a predilection for the aortic rather than the mitral valve or else that it is not rheumatic at all.

A PHYSICIAN Why should the veins become distended?

DR JAMES C WHITE You immediately get right heart failure, you see. Following the damming up of the circulation in the right heart, the neck and arm veins are the first to become distended.

DR COLBY He died pretty quickly.

A PHYSICIAN There were five minutes.

DR WYMAN RICHARDSON May I make a speech, more in connection with the first case than this? I have thought for a long time that pulmonary thrombosis, the thrombosis that leads to embolism, must occur at that time when most factors favor coagulation, and therefore it seems reasonable that this thrombosis may occur during the period of greatest blood stasis. There may be marked blood stasis in the veins during the period of anesthesia and flaccid paralysis because of the fact that the tone of the muscles and the muscular movements do aid venous return, and also at the time of operation, when trauma increases coagulation and when pressure relations are changed in the abdomen. Furthermore, there may be trauma from pressure of instruments. Therefore thrombosis may occur during the period of anesthesia and at the time of operation. It might be true therefore that one might get increased venous circulation by active measures during the period of anesthesia, and thus prevent thrombosis. I have not the brains nor the opportunity to work out this theory. I wonder if anyone else might possibly do something with it.

In regard to this last case, it would seem that sepsis was the important factor.

There have been patients who have died of pulmonary embolism on the operating table before the incision was made.

DR MALLORY One does have to bear in mind always the possibility that thrombosis may have occurred before operation. Probably in these prostatic cases that is actually the situation.

The New England Journal of Medicine

SUCCESSOR TO
THE BOSTON MEDICAL AND SURGICAL JOURNAL
Established in 1828

Published by THE MASSACHUSETTS MEDICAL SOCIETY
under the jurisdiction of the

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SUBSCRIPTION TERMS \$6.00 per year in advance postage paid
for the United States Canada \$7.00 per year \$8.52 per year
for all foreign countries belonging to the Postal Union

Material for early publication should be received not later
than noon on Saturday. Orders for reprints must be sent to
the Journal office 8 The Fenway

The Journal does not hold itself responsible for statements
made by any contributor

Communications should be addressed to The New England
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The Massachusetts Medical Society

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Physician, Rutland State Sanatorium His subject is "Evolution of Pneumothorax Therapy" Page 1013 Address Rutland State Sanatorium, Rutland, Massachusetts

LAHEY, FRANK H. M.D. Harvard University Medical School 1904 F.A.C.S. Director of Surgery, The Lahey Clinic Surgeon-in-Chief, New England Baptist Hospital Surgeon New England Deaconess Hospital His subject is "Thyroid Diseases" Page 1016 Address 605 Commonwealth Avenue, Boston, Massachusetts

STOLL, HENRY F. M.D. Columbia University College of Physicians and Surgeons 1902 Visiting Physician, Hartford Hospital Consulting Physician, New Britain General Hospital, Bristol Hospital and Windham Community Hospital Senior Consultant, Wildwood Sanatorium for Tuberculosis, Hartford, Connecticut His subject is "Prevention of Litigation Requires Early and Thorough Examination and a Correct Diagnosis" Page 1022 Address 179 Allyn Street, Hartford, Connecticut

COTTON, FREDERIC JAY M.D. and MORRISON, GORDON MACKAY, M.D. See page 817, issue of April 12, for records of authors Their subject is "Acromioclavicular Dislocation and Its Repair" Page 1025

AMERICAN COLLEGE OF SURGEONS

Six months hence we are to have the annual meeting of the American College of Surgeons in Boston

This annual convocation is always of interest and importance, not only because it means two or three thousand surgeons in Boston (or wherever it may be) but because it connotes a vast quiet movement, a movement toward better standardized, better controlled, more intelligent work in all the hospitals of the land

The College is but twenty years old, but in its time it has done much

With coöperation of the American Hospital Association it has, very quietly, reorganized standards of hospitals from coast to coast

And this has been as the result simply of a universal "showdown", of a careful systematic evaluation of what we had, and an insistence on what we should have in order to serve the common good, professionally

The first idea of the college was to educate the profession to higher standards

Much has been and is being done in this direction and the coming meeting is planned not only to show work and results, but to reach the public

Just as it presently became evident that we must improve hospitals in order to help surgeons' work, thus necessitating the great hospital campaign, so it has become evident that

to make our work possible on a rising plane we must first educate the profession, directly

Therefore, we have seen the College take up branches of work such as are carried on by the Cancer Committee, The Registry of Bone Sarcoma, The National Fracture Committee, The Committee on Health and Hospitalization, and the Committee on Industrial Surgery

Much good work has been done by these and by their sub committees and regional groups

And the "regional" meetings of the College all over the country have been of rare educational value

Unfortunately, here in New England, possibly because we have thought that we needed this work a little less and have cooperated less actively, these educational enterprises have been less energetic hereabouts and less obvious We have perhaps undervalued the College and its work We can be assured, however, that, the country over the results accomplished by the College have been profoundly important

And now comes a further development In order that we may well serve our public, *the public must be educated*

And in this coming session, for the first time, are to be stressed the meetings on *private health*

Public health, vastly important, has its say What is now to be stressed is the education of John Doe as to what the qualified doctor can do for him, and his

Come to think of it, this is pretty nearly an untouched field, and this year the College is going to enter it, in earnest

There is every indication also that the coming session as a clinical session is in no way likely to fall below the high standard previously set

Organization for the meeting began last October, and not only are the medical schools and the recognized urban hospitals ready to do their full part, but in larger measure than ever before the outlying hospitals are counted on to do their part The amount of clinical instruction offered at these meetings is rather amazing in bulk and scope

All this organization is of course, closely associated with the Central Offices

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Assistant Director Dr Bowman Crowell.
Hospital Head Dr M McEachern
Business Manager Mr A. D Ballou.

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Chairman of Meeting Committee Dr Arthur W Allen

Secretary Dr Ernest M Daland

Executive Committee

Programme Dr Richard H. Miller
Scientific Exhibits Dr Robert B Greenough
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DR. PHANEUF ADDRESSES THE MEDICAL
SOCIETY OF THE COUNTY OF NEW YORK

Dr Louis E Phaneuf addressed the Medical Society of the County of New York on Monday evening April 23, the subject of his address being The Diagnosis and Treatment of Placenta Previa

CORRESPONDENCE

TWO QUESTIONS RESPECTING ARTIFICIAL
INSEMINATION

Editor, *New England Journal of Medicine*

During the past week a quantity of most unfortunate publicity has been given by the lay press to the subject of artificial insemination, under the ridiculous caption of 'test tube babies'. I call this publicity unfortunate, because it is inevitably destined to raise among childless people false hopes which are doomed to disappointment. Since Morris Fishbein has seen fit to mention a published paper of mine in this connection, I have been drawn more or less into the discussion. I should like, therefore to make certain facts clear.

Two distinct questions must be considered. The lay press with its characteristic preference for sensationalism rather than accuracy confuses the two. They are as a matter of fact, entirely separate. The first is the value of artificial insemination simply as a therapeutic measure in sterility. The second is the propriety of artificially introducing semen from an alien donor into the wives of hopelessly sterile husbands or into unmarried women.

The first question is medical and may be definitely answered. If natural intercourse allows the penetration of normal spermatozoa into the uterus then no extra advantage whatsoever is to be gained by artificial insemination, and certainly no mysterious miracle can be wrought by such means. If, however there is hypospadias or impotence or extreme dyspareunia or an obstinate hostility of the endocervical mucus, then artificial insemination may be used to overcome the obstacle. I have found it advisable to employ this method in five cases of sterility out of some 800 cases seen and treated in the past fifteen years.

The second question is basically sociologic, though legal and moral issues are raised by certain polemicists in the present discussion. If an intelligent woman seriously decides that she wants to have a baby by a man other than her lawful husband I should say only that the worthiness of her purpose and the best manner of its accomplishment are matters upon which different opinions may reasonably be held. Dogmatic pronouncements upon such a subject are particularly unconvincing.

SAMUEL R. MEAKER, M.D.

475 Commonwealth Avenue Boston Mass

ANOTHER VIEW OF AN EXPENSIVE DISEASE

Editor *New England Journal of Medicine*

In the *Journal* of April 12 1934 there appeared a letter from Frank H Dunbar M.D., under the heading 'An Expensive Disease'. I should like to make the following comments on that letter.

In the first place Dr Dunbar's figures are misleading if not erroneous. He leaves the impression that but two cases from the town of Mansfield were treated at the Bristol County Hospital in 1933 and that the total hospitalization was 107 days. The fact is that four patients from Mansfield were treated at the Bristol County Hospital in 1933 for a total of 366 hospital days. In his calculations he excluded two patients because they themselves paid a weekly charge of \$9.10 and he failed to mention that the town receives subsidy from the state for every case of tuberculosis hospitalized. In addition to the four hospitalized cases, 22 other cases from Mansfield were examined and x-rayed in the Out-Patient Department and five more examinations with x-ray were given to follow up cases without any additional charge to the town. These facts were not considered by Dr Dunbar. In other words in estimating the cost he employed simple arithmetic but faulty mathematics to arrive at a wrong answer. I should like to state that one of the cases from Mansfield had the benefit of major surgery (thoracoplasty) which resulted in marked improvement in the patient's health and gives promise of a cure. There is no added charge to the town for this major surgery, the value of which should not be lightly estimated. But there is another and more important aspect to this question. Tuberculosis is a widespread disease, very devastating in its effects on the health of the nation being still the major cause of death in young and middle-aged people and its continuance is largely due to the spreader or open case in the community. One open case removed from a town and properly cared for in an institution insures some degree of protection from tuberculous infection to others in that community. Dr Dunbar's method of figuring the cost of the care and treatment of tuberculosis is not greatly unlike that of a man who has to insure his employees and then at the end of the year should one accident occur makes a mathematical computation to show how costly that accident was. In other words he takes no account of any other values involved.

Massachusetts can be proud of what she has accomplished in the campaign against tuberculosis. She is today, due to wise leadership supported by progressively thinking people foremost amongst the states in anti tuberculosis work and I venture to state that of all the undertakings to which people of this country contribute by way of taxation not one has given a richer reward or greater returns for the investment than anti tuberculosis work which includes the tuberculosis hospitals.

The mortality rate from pulmonary tuberculosis in the Bristol County Tuberculosis Hospital Zone dropped from 88 per 100 000 in 1928 to 49 per 100 000 in 1932 a decrease in mortality of 43 per cent in the four year period. No thinking person will deny that hospitalization and modern methods of treatment in the hospital have contributed largely to this reduction in mortality. Has the price been too great?

Finally it must be remembered that when a sin

Public Health Meeting Dr Alexander S Begg
Cancer Dr Channing C Simmons
Eye and Ear Dr Harris P Mosher
Urology Dr J Dellinger Barney
Obstetrics and Gynecology Dr Frederick C Irving
Nose and Throat Dr George L Tobey, Jr
Fractures Dr Charles L Scudder
Industrial and Reconstructional Surgery Dr
Frederic J Cotton

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Representing the various institutions—
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Edward D Leonard	Philip D Wilson
Haisev B Loder	Edward L Young, Jr

MISCELLANY

ADDED FEATURES OF THE PRENDERGAST
PREVENTORIUM

Dr Nathaniel K Wood, Chairman of the Prendergast Preventorium Committee of the Boston Tuberculosis Association, wishes to announce to the medical profession that the Prendergast Preventorium 1000 Harvard Street, Mattapan is equipped to take care of diabetic children, and children suffering from malnutrition, as boarders. The rates are \$10 a week. An extra charge is made to defray the actual cost of insulin used on each diabetic child.

AN INSTITUTE ON HEALTH EDUCATION
IN THE SECONDARY SCHOOLS

The Massachusetts Tuberculosis League and The Southern Middlesex Health Association have issued invitations to attend an Institute on Health Education in the Secondary Schools to be held on Saturday, May 12 at the Winchester High School Main Street and Mystic Valley Highway Winchester, Mass.

The morning session will begin at 10 30 at which Dr C-E A. Winslow of Yale University will deliver an address on Cultural Objectives of Health

RÉSUMÉ OF COMMUNICABLE DISEASES
IN MASSACHUSETTS FOR MARCH, 1934

Measles reached its highest reported incidence for Massachusetts

Diphtheria and typhoid fever give every indication of running lower this year than ever before

Lobar pneumonia and scarlet fever show nothing remarkable

Pulmonary tuberculosis and whooping cough were reported in slightly higher figures than for March, 1933

Epidemic cerebrospinal meningitis, mumps, chicken pox tuberculosis other forms and anterior poliomyelitis show nothing remarkable

RARE DISEASES

Anterior poliomyelitis was reported from Boston, 1, Revere, 1 total 2

Anthrax was reported from Salem, 1

Dysentery (amebic) was reported from Fall River, 2, Ipswich, 1, New Bedford, 1, Salem, 1, Worcester 1 total, 6

Dysentery (bacillary) was reported from Lawrence 2 Taunton, 1, total, 3

Encephalitis lethargica was reported from Clinton, 1 Lawrence, 1, Stoneham, 1, Westfield, 2, total, 5

Epidemic cerebrospinal meningitis was reported from Boston 2 Cambridge, 1, Northampton, 1, Peabody, 1, Southbridge, 1, Springfield, 1 total 7

Malaria (therapeutic) was reported from Taunton, 1

Septic sore throat was reported from Beverly 2, Boston, 5 Brookline 1, Foxboro, 2 Haverhill, 1, Malden, 5 Medford, 5, Milford, 1, Salem 1, Topsfield, 1 total, 24

Tetanus was reported from Fall River, 2

Trachoma was reported from Boston, 2, Revere, 1, total, 3

Trichinosis was reported from Dedham, 1

Typhus fever was reported from Lynn 1

Undulant fever was reported from Southbridge, 1

MASSACHUSETTS DEPARTMENT
OF PUBLIC HEALTH

MONTHLY REPORT FOR MARCH 1934

Disease	Mar 1934	Mar 1933	Aver age*
Anterior Poliomyelitis	2	1	2
Chicken Pox	1004	1505	1058
Diphtheria	64	86	215
Dog Bite	499	388	366
Epidemic Cerebrospinal Meningitis	7	2	12
German Measles	57	46	264
Gonorrhea	487	476	492
Lobar Pneumonia	552	418	601
Measles	9891	1547	2265
Mumps	644	1098	929
Scarlet Fever	1209	1912	1685
Syphilis	376	364	349
Tuberculosis Pulmonary	424	353	426
Tuberculosis Other Forms	43	45	48
Typhoid Fever	3	8	10
Undulant Fever	1	0	0

and as Prof. Chittenden was willing to say a good word in my behalf I was admitted to the second year class and had the privilege of taking my courses in pathology and bacteriology under Dr Welch

The first day he met our class which numbered twenty five he demonstrated the organs obtained that morning at autopsy from a case of acute military tuberculosis His manner of demonstration made the tubercle and tuberculosis seem to me a most fascinating subject of study I had never had a teacher make anything appear so interesting I recall vividly my feelings as I walked out of the room and down the street. As I had not met any of my classmates no one disturbed my thoughts I was convinced by what I had seen and heard that I had made no mistake in coming to Johns Hopkins The famous saying in regard to Mark Hopkins came to my mind and I thought then and I think now, that William H. Welch on one end of a log and a student on the other would make a medical school

During that academic year of 1895-96 Dr Welch gave himself without stint to the students taking his courses in bacteriology and pathology I took full notes of his lectures and demonstrations and when bound they made two goodly sized volumes Fortunately they are preserved and these abstracts of his lectures indicate the wealth of knowledge he gave to his students, and give clear indication of the interesting and systematic way in which he presented the subjects taught I recall that my friend and classmate Walter Steiner was able to take better and fuller notes Two years ago a volume of notes taken by students of Virchow's lectures was published and presented to the members of the German Pathological Society at their annual meeting It has been suggested that a similar memorial volume might be compiled of Welch's lectures

At the end of the academic year on the eve of my return to New England Dr Welch gave me a letter of introduction to Dr Councilman in which he expressed the hope that I might work that summer under Dr Councilman's direction This letter accomplished much for me as it opened wide the door of opportunity to work under Dr Councilman An enthusiasm for the study of pathology instilled by Dr Welch made that summer a very happy one Work done for the love of it was rewarded by an offer from Dr Councilman, before my return to Baltimore of a position in his laboratory on my graduation The lure of pathology as it was studied in the laboratories of Welch and Councilman was so great that I accepted the opportunity for further training without hesitation Dr Councilman became my guide and teacher and one to whom I could always turn for help and advice knowing he would never fail me For this highly prized friendship I owe a great debt to Dr Welch.

The following year as my funds were low Dr Welch made me a student assistant in his laboratory and thereby enabled me to see the work of his department at close range All the details of the

work were in the hands of Dr Flexner and it was he who did the autopsies Dr Welch rarely came to the laboratory until the early afternoon unless a lecture was scheduled In the mental picture of those days I see him as a kindly serene gentleman seated before the microscope of one of the assistants unhurriedly studying a specimen and at the same time asking and answering questions He is smoking a cigar and wearing street clothes unprotected by a laboratory coat. He seemed to me more like an interested visitor than the laboratory head to which office I, the lowliest worker there, assigned in my mind Dr Flexner Dr Welch's ability to work without haste and without waste is shown by the fact that a bibliography of his published writings prepared in 1920 listed 411 articles

Rumor had it that he read far into the night and that breakfast and luncheon were a combined meal His lodgings were on the second floor of a house on St. Paul Street and he took his meals at the Maryland Club nearby His study was lined with books On my first visit to his chambers he showed me Hirsch's Biographisches Lexikon in six volumes and so impressed me with its value that I bought a set as soon as one was available

The last time I saw Dr Welch was at a luncheon in Baltimore in the fall of 1932 He seemed so alert mentally and he appeared so young for his years that I was moved to tell him that he seemed no older than he did when I sat at his feet as a student thirty seven years before "That does not prove a thing," he said, "I may have been senile then"

Dr Welch with characteristic modesty claimed that what he accomplished was largely due to good fortune in arriving on the medical scene at the time he did. If he had begun his life work twenty years earlier it would have been impossible he claimed, to have established pathological laboratories in this country If he had arrived twenty years later the work would have already been done by others It is known however, that opportunity favors the prepared mind Leaving native ability aside no one was so well equipped by education and training as was Welch when he took up his work in New York in 1878 He had graduated third in his class of one hundred and eleven at Yale After matriculating in medicine at P and S he took the unusual step of interrupting his medical studies to return to New Haven where he spent a year in the study of science devoting most attention to organic chemistry During his internship of eighteen months at Bellevue he learned much morbid anatomy from association with Delafield and Janeway He spent two years abroad where he first studied normal histology under Waldeyer at Strassburg and later worked with Ludwig at Leipzig In the second year he carried on his important investigations on the cause of pulmonary edema under Cohnheim in Breslau. There he met Koch then a general practitioner but doing epoch making work in the study of the anthrax bacillus There also he gained much from Weigert

gle case of tuberculosis is hospitalized and properly taken care of (granted that the cost for the individual case is great) not only the patient benefits but the community, and not alone the community of to-day but that of the years ahead.

Yours truly,

GARNET P. SMITH, *Superintendent*,
Bristol Connty Hospital,
Attleboro, Mass

April 28, 1934

A TRIBUTE TO DR. WILLIAM HENRY WELCH
BY DR. JOSEPH H. PRATT, 270 COMMON
WEALTH AVENUE BOSTON MASS

May 6 1934

Dr. Welch had so long been the recognized leader of the medical profession in this country that even men who graduated toward the end of the last century know no other. To many Dr. Welch in the eminence of his position in medical affairs, seemed more like an institution than a mere man. All those who had the happy fortune to know him must have been impressed with his modesty, simplicity, and kindliness. "Some men mellow with age," said Sir Andrew Balfour, 'but Welch I think must have been born mellow and his mellowness has merely ripened with the years.'

Urbanity he certainly possessed and with it that equanimity of spirit which Dr. Osler extolled so highly. He had that quality of detachment that enabled him to accomplish great reforms in medical education without stress and strain and without passion. He criticized the existing order only indirectly by suggesting something better. His early career shows the courage of the man and his indifference to material gain. He turned aside from the allurements of clinical medicine to be the first American to devote his life to pathology. This was a bold step as he had no money and the teaching of pathology, which paid next to nothing, was looked upon simply as a stepping stone to clinical professorship and a consulting practice.

He had the courage to leave his own school, "P and S" in New York, then locally supreme in medicine and to join the faculty of Bellevue as the latter school offered him three rooms for a laboratory and the former nothing.

Later he had the courage to leave metropolitan New York and move to provincial Baltimore. When he did so his friends said he probably would become a connoisseur of terrapin and old Madeira but that his development as a pathologist would suffer. At that time, 1884, there was no Johns Hopkins Hospital and no Johns Hopkins Medical School. Five years later the hospital was opened, and ten years elapsed before he could resume the teaching of pathology to undergraduate students. In Baltimore he had the courage and faith to plan an ideal medical school with entrance requirements so much higher than existed anywhere else in the world that some doubt was entertained whether more than a handful of students would apply for admission. His plan was accepted from a number submitted

and the School began its first year with eleven students. The pathological building on the hospital grounds with the addition of two stories was added to the medical school. Laboratories of anatomy, physiological chemistry and physiology were housed in that building until a new one was constructed the following year.

During his New York days he resisted two temptations that reveal something of the character of the man. He had been less than six months at Bellevue when the alumni of the College of Physicians and Surgeons raised money for a pathological laboratory and the direction and use of this laboratory was offered to Dr. Welch. He declined the post and characteristic helpfulness suggested the name of a friend, Prudden, whom he considered best qualified for the position. In a letter to Prudden, fortunately preserved and quoted by Dr. Flexner in his delightful biographical sketch of Welch, he wrote: "Deafield proposed that I should go as his first assistant and have charge of the histological department and assist him as much as necessary in the pathological part. The salary was to be five hundred dollars for the first year, and I believe more subsequently. I was naturally delighted with the offer and thought it was just what I wanted, an opportunity to work in the direction where I had studied most. Upon speaking of the matter before coming to a decision, with some of the professors at Bellevue, I find they are reluctant to have me leave them and even represent it as not the square thing for me to go at present. The latter motive especially influenced me to stay, as I do not believe it pays to do anything unfair. I feel as if I were relinquishing a great opportunity and do not see any equivalent for it at present at Bellevue."

It was not long before Dr. Welch found great favor with Prof. Austin Flint, the leading American physician of that generation. He wrote the section on pathology for the fifth and sixth editions of Flint's book on the practice of medicine, then the leading American textbook. Dr. Flint wrote clearly and well and Dr. Flint insisted that Dr. Welch's style of presentation was so similar to his own that he had difficulty in deciding whether he or Welch had written certain sections. Dr. Flint wanted Welch to be his successor and would have made him clinical professor of medicine but Welch declined to be considered for the position as it would have blocked the advancement of E. G. Janeway. When told of this incident by Dr. Welch, I gained the impression that Dr. Janeway never knew that he owed his professorship at Bellevue to the self-sacrifice of his friend.

Dr. Welch was the first dean of Johns Hopkins and to him I appealed when I sought to enter the school. He was loath to admit anyone to advance standing as he felt that if the school was to attain its high goal, better instruction must be given than was obtainable in any other institution existing at that time. Contact with men, not courses and credits counted with him. The fact that I had worked a year with Professor Chittenden 'merited special consideration in your case,' Dr. Welch wrote me.

Secretary George P Reynolds
Treasurer John Rock
Commissioner of Trials Channing Frothingham
Councilor for the Nominating Committee Lincoln Davis
Alternate Reginald Fitz

Committee on Supervision Thomas H Lanman, Joseph Garland.

Auditing Committee F C Newton, C C Lund
Conrad Wesselhoeft

Censors Horace Binney, George L Tobey Jr, Gerald Blake William B Breed Fletcher H Colby

Councillors A W Allen, A E Austin J W Bartol, G H Bigelow, H Binney G Blake W B Breed W J Brickley J E Briggs C S Butler D Cheever, R C Cochrane, F H Colby, F J Cotton W P Cross L Davis G P Denny R L DeNormandie W H Ensworth, R Fitz, C Frothingham G L Gateley H W Goodall R B Greenough J Homans H T Hutchins, E P Joslin F H Lahey, R I Lee, G A Leland G B Magrath J H Means T J OBrien A K Paine F W Palfrey W S Parker W F Regan G P Reynolds W H Robey G C Shattuck, W R Sisson Louisa Paine Tingley G L Tobey Jr J R Torbert, H P Towle, S Warren F A Washburn, C Wesselhoeft

A W ALLEN
R C COCHRANE.
H T HUTCHINS
W B BREED
J P OHARE,

Nominating Committee

It was voted that the Committee on Social Meetings be abolished as it has no duties

Dr Abraham Myerson then gave a most interesting and scholarly talk on the subject of criminal responsibility The discussion was opened by Drs Briggs and Overholser

The meeting adjourned at 10 45 P M

THE MASSACHUSETTS SOCIETY FOR SOCIAL HYGIENE

The Annual Meeting of the Massachusetts Society for Social Hygiene was held at the Parker House April 26, 1934

The officers elected for the ensuing year are as follows

President Dr E Granville Crabtree
Honorary Vice-President Dr George H Bigelow
Vice-President Mrs Maida H Solomon
Secretary Miss Elizabeth Ross
Treasurer Mr William Wadsworth
The directors chosen are as follows

Dr Harold L Leland Herbert C Parsons Dr George Gilbert Smith Mrs Eva Whiting White, Dr Gaylord W Anderson Dr Wilson G Smillie the Rev Vincent L Bennett, Dr Harry W Goodall Mrs Augustus Hemenway Dr Alonzo K. Paine, Richard C Paine and Dr A. Warren Stearns

ANNUAL MEETING OF THE AMERICAN ASSOCIATION FOR THE STUDY OF GOITER

This meeting will be held in Cleveland, Ohio, June 7, 8, 9, 1934

Scientific sessions are open to any members of the medical profession in good standing

Registration fee \$2 00

For details of the program apply to Dr J R. Yung, Terre Haute, Ind

NEW ENGLAND HEART ASSOCIATION

The next meeting of the New England Heart Association will be held in the Peters House of the Rhode Island Hospital, Providence, R I, Monday, May 21 at 8 15 P M

All members of the New England Heart Association and interested physicians are invited to attend.

SPECIAL LECTURESHIP UNDER THE AUSPICES OF THE NEW ENGLAND HEART ASSOCIATION

Dr Frank N Wilson of the University Hospital, University of Michigan will give two lectures at the Boston Medical Library (John Ware Hall) at 4 30 P.M., May 24 and 25, 1934

May 24 When Is an Electrocardiographic Examination Indicated and What Sort of Help Can It Give?

May 25 The Electrocardiographic Diagnosis of Myocardial Infarction

Physicians and medical students are invited to attend.

Annual Meeting Friday, May 25 at 4 00 P M

NEW ENGLAND PHYSICAL THERAPY SOCIETY

ANNUAL MEETING

The annual meeting of the New England Physical Therapy Society will be held in Sprague Hall, Boston Medical Library, 8 Fenway, at 8 P.M., on Wednesday, May 16

PROGRAM*

Subject Physical Medicine.

(a) Electrotherapy (with motion pictures)
William D McFee M.D Boston.

(b) Electrosurgery Halsey D Loder, M.D., Boston

Discussion will be opened by Franklin P Lowry, M.D of Newton, and Lester R Whitaker, M.D, of Boston.

Prior to the program there will be a brief business session at which officers will be elected for the ensuing year, and such other matters considered as may properly come before the annual meeting

The Executive Council will meet at 7 45 P.M

Members are asked to note the *change in place of meeting*

In charge of Dr William D McFee M.D

and Ehrlich who were fellow workers in Cohnheim's laboratory. Before returning to America he did more work in experimental pathology under von Recklinghausen.

Our debt to Welch was well expressed by Osler when he wrote, "No man of his generation in the United States has so deeply influenced the profession, not only by his administrative ability and his stimulating work in pathology, but much more by a personal, unselfish devotion to its highest interests."

RECENT DEATHS

ENSWORTH—WILLIAM HOWARD ENSWORTH, M.D., of 40 Princeton Street, East Boston, died at his home, May 3, 1934. He was born in East Boston, October 13, 1865, the son of Charles P., and Hannah Howard Ensworth. His early education was acquired in the schools of East Boston, and he graduated in medicine from the Harvard Medical School in 1888. He joined the Massachusetts Medical Society in 1888, and was a Fellow of the American Medical Association. He was active in Masonic circles.

He is survived by a sister, Mrs. Adelaide Gouge of Halifax, Nova Scotia, and a nephew, Marcus Ensworth of Watertown, Massachusetts.

RIPLEY—WILLIAM LITTLEFIELD RIPLEY, M.D., of 9 Oak Square, Brighton District, Boston, Massachusetts, died at his home, May 1, 1934. Dr. Ripley was born in Boston in 1872, the son of Eliab and Frances Littlefield Ripley, and among his ancestors was Elder Brewster of the Mayflower.

His premedical education was acquired at the Worcester Academy and Tufts College, and he received his M.D. degree from Tufts College Medical School in 1903.

He was a Fellow of the Massachusetts Medical Society having joined in 1903.

He had taught physiology at Tufts for a short time and carried on a large general practice with especial interest in x-ray work.

He was a member of the Ancient and Honorable Artillery Company, the Fusiliers, the Army and Navy Club, the Presentation Club of Brighton, the Catholic Order of Foresters and the Newton Lodge of Elks.

He is survived by his widow, Mrs. Alice Turnbull Ripley, eight children, William, Franklin, Miss Geraldine, Robert, Miss Stella, Miss Virginia, Charles and Vincent. A brother and sister also survive him.

OBITUARY

A TRIBUTE TO ARTHUR L. CHUTE, M.D.

In the death of Dr. Arthur Lambert Chute, which occurred on January 12, 1934, the New England Branch of the American Urological Association loses one of its most distinguished members and many of

us, the valued friend and counsellor of many years.

Dr. Chute was one of the earliest of the Boston members of the American Urological Association and a founder of the New England Branch Society. He had served as President of both of these organizations, as well as President of the American Association of Genito-Urinary Surgeons, and Chairman of the Section of Urology of the American Medical Association.

He early gave his attention to the study of urological conditions and was one of the first men in Boston to specialize definitely in this branch of surgery. Some of the earliest, if not the first cystoscopic examinations and ureter catheterizations by the indirect method made in Boston, were done by him at the Boston Dispensary.

He was a tireless worker, a clear thinker, and a prolific writer. His publications were all along clinical lines and based on extensive personal experience and observation. He was among the first to stress the importance of pre-operative treatment of prostatics, the free use of hypodermoclysis and the two-stage prostatectomy. He was also among the earliest and staunchest advocates of spinal anesthesia in prostatic surgery. One of his outstanding traits was a most useful and wholesome skepticism of new and untried methods, although among the first to adopt anything of proved worth.

He rarely missed a medical meeting and one of his greatest pleasures was contact with his colleagues where his geniality, his sense of humor, and his keen and kindly comments made him a delightful companion. His ideals and standards were of the highest and his devotion to his patients, his practice, his family, and his friends, is an example and inspiration to all who knew him.

He is survived by his widow and three children: Dr. Richard Chute of Boston, Mrs. Samuel McMurtrie of New York, and Oliver Swift Chute of Whitinsville, to whom the members of the Society offer the most sincere sympathy in their as well as our own irreparable loss.

RICHARD F. O'NEIL,

BRYANT D. WETHERELL,

Committee on Resolutions

REPORTS AND NOTICES OF MEETINGS

SUFFOLK DISTRICT MEDICAL SOCIETY

The Annual Meeting of the Suffolk District Medical Society was held on April 25 in John Ware Hall. The meeting was called to order by Vice President Means at 8:25 P.M.

The usual reports of the Treasurer and Auditing Committee were read and accepted.

The report of the Nominating Committee was accepted and the Secretary was instructed to cast one ballot for the officers of the society as listed:

President Robert L. DeNormandie
Vice-President Conrad Wesselhoeft

Secretary George P Reynolds
Treasurer John Rock
Commissioner of Trials Channing Frothingham
Councilor for the Nominating Committee Lincoln Davis
Alternate, Reginald Fitz

Committee on Supervision Thomas H Lanman,
Joseph Garland

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Gerald Blake William B Breed Fletcher H Colby

Councilors A W Allen, A E Austin J W Bar
tol G H Bigelow H Blinn, G Blake W B Breed
W J Brickley J E Briggs C S Butler D
Cheever R C Cochrane F H Colby, F J Cotton,
W P Cross, L Davis, G P Denny, R L DeNor-
mandle W H Ensworth, R Fitz C Frothingham
G L Gately H W Goodall R B Greenough J
Homans H T Hutchins, E P Joslin F H Lahey,
R I Lee, G A Leland, G B Magrath J H Means
T J O'Brien, A K. Paine, F W Palfrey W S
Parker, W F Regan, G P Reynolds W H Robey
G C Shattuck, W R Sisson Louisa Paine Tingley
G L Tobey, Jr J R Torbert H P Towle S War-
ren, F A Washburn, C Wesselhoeft

A W ALLEN

R C COCHRANE

H T HUTCHINS

W B BREED

J P OHARE,

Nominating Committee

It was voted that the Committee on Social Meet-
ings be abolished as it has no duties

Dr Abraham Myerson then gave a most interest-
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Briggs and Overholser

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Treasurer Mr William Wadsworth

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George Gilbert Smith, Mrs Eva Whiting White, Dr
Gaylord W Anderson, Dr Wilson G Smillie, the
Rev Vincent L Bannett Dr Harry W Goodall, Mrs
Augustus Hemenway, Dr Alonzo K Paine, Richard
C Paine and Dr A. Warren Stearns

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Wednesday May 16

PROGRAM*

Subject Physical Medicine

(a) Electrotherapy (with motion pictures)

William D McFee M D, Boston.

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Discussion will be opened by Franklin P Lowry,
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Boston

Prior to the program there will be a brief business
session at which officers will be elected for the
ensuing year, and such other matters considered as
may properly come before the annual meeting

The Executive Council will meet at 7 45 P M

Members are asked to note the *change in place of
meeting*

In charge of Dr William D McFee M D

All members of the medical profession are cordially invited to attend and participate in the discussion

ARTHUR H. RING, M.D., *Secretary*

BERKSHIRE DISTRICT MEDICAL SOCIETY

The Berkshire District Medical Society will hold its annual meeting at the Berkshire Hunts Club at Lenox on the evening of May 14. Dinner will be served at six thirty.

The speaker on this occasion will be Dr. John St. John of New York. The subject, "A Twenty Five Year Study of Cancer of the Stomach."

HUGH J. DOWNEY, M.D., *Secretary*

THE NEW ENGLAND ROENTGEN RAY SOCIETY

The May meeting will be held Friday night, May 18, 1934, at the Boston Art Club, Boston, Mass., at 8 P.M.

The Annual Dinner will be held at the Boston Art Club at 6 45 P.M.

SCIENTIFIC SESSION

"The Value of Roentgenography in the Diagnosis of Laryngeal Disease" Chevalier L. Jackson, M.D., Philadelphia, Pa.

THOMAS R. HEALY, M.D., *Secretary*,
370 Marlborough Street, Boston, Mass.

THE HARVARD MEDICAL SCHOOL ALUMNI ASSOCIATION

The Annual Meeting of the Harvard Medical School Alumni Association will be held Saturday, May 12. Ward rounds (10 a.m. to 12 m.) and operations will be held at the Peter Bent Brigham, the Massachusetts General and the Boston City Hospitals. A business meeting and luncheon (\$1.00) will be held in the gymnasium of Vanderbilt Hall at 12 30 p.m.

SOCIETY MEETINGS, CONGRESSES AND CONFERENCES

May 10—Massachusetts General Hospital will hold a Clinical Meeting of the Staff in the Moseley Memorial Building at 8 15 P.M.

May 11—William Harvey Society will meet in the Auditorium of the Beth Israel Hospital at 8 P.M.

May 12—Institute on Health Education in the Secondary Schools. See page 1036.

May 12—Harvard Medical Alumni Association. See notice above.

May 14, 15, 16, and 17—Thirtieth Annual Meeting of the National Tuberculosis Association. For details apply to the National Tuberculosis Association, 450 Seventh Avenue, New York City.

May 15—South End Medical Club will meet at the office of the Boston Tuberculosis Association, 554 Columbus Avenue, Boston, at 12 noon.

May 15—New England Physical Therapy Society. See page 1041.

May 15—New England Obstetrical and Gynecological Society will hold its spring meeting at Portland, Maine. The registration of members will take place at the Maine General Hospital from 9 A.M. until 1 P.M. and in the afternoon at the Chamber of Commerce Building, 142 Free Street from 2 P.M. until 5 P.M.

FRED J. LYNCH, M.D.

475 Commonwealth Avenue, Boston.
May 18—The New England Roentgen Ray Society. See notice above.

May 19—The New England Pediatric Society will meet at New Haven, Conn., at 2 30 P.M. Information may

be obtained from the Secretary, Dr. Gerald Hoeftel, 319 Longwood Avenue, Boston.

May 21, 24, 25—New England Heart Association. See page 1041.

May 26, 27, 28, and 29—The American Association on Mental Deficiency. Details may be obtained from the Secretary, Dr. Groves B. Smith, Godfrey Illinois.

June 7, 8, 9—Annual Meeting of the American Association for the Study of Golter. See page 1041.

June 12—American Heart Association will meet at 9 30 A.M. at the Cleveland Hotel, Cleveland, Ohio.

July 24-31—The IVth International Congress of Radiology will be held in Zurich under the presidency of Professor H. R. Schnitz. General Secretary Dr. H. E. Walther, Gloriastrasse 14, Zurich.

August 18 - September 30—Medical Study Trip to Hungary. See page 975, issue of May 10.

September 3-6—American Public Health Association at Pasadena, California. Dr. J. D. Dunshie, Chairman, Local Committee on Arrangements.

September 4, 5, 6—International Union Against Tuberculosis. For information address the National Tuberculosis Association, 450 Seventh Avenue, New York City.

DISTRICT MEDICAL SOCIETIES

BERKSHIRE DISTRICT MEDICAL SOCIETY

May 14—See notice elsewhere on this page.

BOOK REVIEWS

The Life of Sir Robert Jones. By Frederick Watson. 318 pp. Baltimore: Williams & Wilkins Company. \$3.75.

The Life of Sir Robert Jones by Frederick Watson, son of Ian MacLaren and son-in-law of Sir Robert, is one of the great medical biographies of our time. Affection prompted it, intimate knowledge made it possible, and a facile pen wrote it. All these three activating factors were necessary if the world was to have a true picture of one of the greatest of surgeons, and the most lovable of men.

The biographer has had access to family chronicles and personal letters, to war documents and plans of medical organization. With his own eyes he has watched the dreams of this happy and valiant warrior reach a fruition rarely realized in the life time of the dreamer.

Rehabilitation of the wounded soldier, of the handicapped civilian, and of the crippled child was the passion of this most famous of orthopedic surgeons. Throughout the book the strength and sweetness of Sir Robert's character are evident in all his thoughts and plans and acts.

It is an inspiring book not less for civilians than for physicians and medical students. It stimulates hero worship of the finest type. There is wealth of fascinating anecdote and stirring struggle, of close friendship and warm family life. The side-lights on noted men and women of our day are illuminating and well directed.

There was an earlier recognition of Sir Robert's originality and eminence in America than in England. Many American surgeons have experienced his priceless friendship.

The epilogue, 'The Personality of Robert Jones,' is a fitting contribution by the author who elsewhere scarcely appears in the book so vivid is the narrative and so successful has Mr. Watson been in submerging his own personality in that of his great subject.

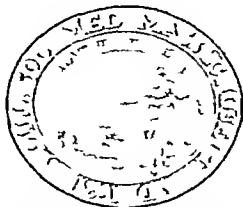
The New England Journal of Medicine

VOLUME 210

MAY 17, 1934

NUMBER 20

The Massachusetts Medical Society



PROGRAM OF THE ONE HUNDRED AND FIFTY-THIRD ANNIVERSARY

THE Exercises of the Anniversary will be held on Monday, Tuesday, and Wednesday June 4, 5, and 6 in the Hotel Bancroft and the adjoining Chamber of Commerce Building, Worcester

WALTER L BURRAGE, *Secretary*
May 6, 1934

1933 — 1934

OFFICERS OF THE SOCIETY

William H Robey, *President*—202 Commonwealth Avenue, Boston
Philemon E Truesdale, *Vice-President*—151 Rock Street, Fall River
Walter L Burrage, *Secretary*—182 Walnut Street, Brookline
Charles S Butler, *Treasurer*—257 Newbury Street, Boston

George P Reynolds, 311 Beacon Street, Boston
—*Chairman, Committee of Arrangements*
Edwin R Leib, 36 Pleasant Street, Worcester
—*Chairman, Local Committee of Arrangements*

STANDING COMMITTEES

Of Arrangements

G P Reynolds, W M Shedden, W R Morrison, Horatio Rogers, W S Burrage

On Publications

R I Lee, Homer Gage, R B Osgood, R M Smith F H Lahey

On Membership and Finance

D N Blakely, Gilman Osgood, G C Caner, J E Fish, H F Newton

On Ethics and Discipline

David Cheever, W D Ruston, S F McKeen, A C Smith, R L DeNormandie

On Medical Education and Medical Diplomas

Reginald Fitz, C H Lawrence, C A Sparrow, E S Calderwood, A S Begg

On State and National Legislation

W H Robey, T J O'Brien, F E Jones, A W Marsh, Shields Warren.

On Public Health

Dwight O'Hara, E F Cody, F G Curtis, G N Hoeffel, G D Henderson.

On Malpractice Defense

F G Balch, E D Gardner, F B Sweet, R P Watkins, A W Allen

On Permanent Home

T J O'Brien, S B Woodward, C G Mixer, J M Birnie, R B Greenough

DELEGATES AND ALTERNATES TO THE HOUSE OF DELEGATES OF THE AMERICAN MEDICAL ASSOCIATION

Delegates

J M Birnie, Springfield, C E Mongan, Somerville, J F Burnham, Lawrence, W H Robey, Boston, E F Cody, New Bedford, R I Lee, Boston

Alternates

W C Leary, Springfield, L S McKittick, Boston, E L Hunt, Worcester, Cadis Phipps, Brookline, P E Truesdale, Fall River, C H Lawrence, Jr, Boston.

GENERAL INFORMATION

Members of the medical profession are cordially invited to attend the exercises of the anniversary

A Bureau of Information will be maintained by the Committee of Arrangements during the meetings in the lobby of the Hotel Bancroft
Parking in the streets in the vicinity of the

hotel is restricted. Fellows are advised to use the parking spaces in the rear of the hotel reached by Portland and Federal Streets, or one of the three large garages which are within one or two minutes' walk.

Fellows are requested to register as soon as they arrive and to get their tickets to the Buffet Luncheon and the Annual Dinner on Tuesday, and the Buffet Luncheon on Wednesday. The charge for the Annual Dinner will be \$2.00 to those whose dues have been paid.

On Tuesday, luncheon will be served at a cover charge to those not members of the Council, on Wednesday, without charge to those who are not in arrears.

The Worcester District Medical Society, at its Annual Meeting on Wednesday, May 9, very generously voted to assume the expense of entertainment for the Fellows and their wives. The Local Committee of Arrangements has arranged with the Worcester, Tatnuck and Wachusett Country Clubs to permit us to play golf on their links at any time during the three days of the meeting. The District Society has also arranged entertainment for the ladies on June 4 and 5. Under the care of a committee of ladies of the Worcester District Society visiting ladies will be taken in busses to the chief points of interest in the city and vicinity, including the new Auditorium, the Higgins Armory, where a very remarkable collection of armor is on exhibition, the Worcester Art Museum, where many fine works of art are on display, and some of the beautiful gardens in and about Worcester. They will also be entertained at luncheons, both Monday and Tuesday, at the Worcester Country Club. Full details will be furnished by the Chairman of the Local Committee of Arrangements, Dr. Edwin R. Leib, 36 Pleasant street, Worcester. Fellows are cordially invited to bring their wives to Worcester.

The Scientific Exhibits will be in the small ballroom immediately back of the main ballroom of the Hotel Bancroft and also on the mezzanine floor above the ballroom and the lobby. See page 1047 for list of exhibits.

The Commercial Exhibits will occupy the lobby of the hotel, the dining room, and the ballroom assembly immediately off the main ballroom. A list of the exhibitors will be found on page 1049.

MONDAY MORNING, JUNE 4

9 30 to 12 30 O'Clock

There will be dry clinics at the following hospitals: Belmont Hospital, Belmont Street, Fairlawn Hospital, 189 May Street, Memorial Hospital, 119 Belmont Street, St. Vincent Hospital, 73 Vernon Street, Worcester City Hospital, 71 Jacques Avenue, Worcester Hahnemann Hospital, 281 Lincoln Street, Worcester State Hospital, Belmont Street.

CLINIC PROGRAMS

MEMORIAL HOSPITAL—JUNE 4, 1934

10 00 A M—12 30 P M

10 00-11 00—*Obstetrical Service*

Single Blade Forceps Rotation—Moving Pictures

Abruptio Placentae—Case Reports with lantern slides

Drs G C Lincoln, J W O'Connor, J E Talbot

Medical Service

Ward Rounds

Demonstration of Unusual Cardiac Cases with Electrocardiograms

Drs O H Stansfield and E J Halloran.

10 30-12 30—*Pediatrics Service*

(1) Demonstration of Interesting Cases of Blood Dyscrasia

(2) Mongolism in Twins—case

(3) Muscular Dystrophy—cases

(4) Children's Diabetic Manual

(5) Pasteurization—efficiency

(6) Modified Home Oxygen Tent

(7) Portable Cubicles

Drs C A. Sparrow, A M Kimberly, H Talamo

11 00-12 00—*Radiology*

Treatment of Skin Cancer—Cases and lantern slides

Dr R. Dresser

11 00-12 30—*Nose and Throat Service*

Bronchoscopy

Cleft Palate

Tonsil Operative Technique

Drs Gordon Berry, H J Gibby, A. L.

Caron, H B Goodspeed

Surgical Service

Varicose Veins—Saphenous Ligation

Abdominal Menstrual Fistula—Case Operations

Drs W C Seelye, B H Alton D S

Adams, C T Smith, B C Wheeler

12 30—Luncheon

WORCESTER CITY HOSPITAL

JUNE 4, 1934

10 00 A M—12 30 P M

10 00-12 00 A M—Winslow Surgery—Surgical Clinic Dr B F Andrews and members of Surgical Staff

Participating in the Clinic Dr F H Lahey and associates presenting brain surgery, surgery of the colon and surgery of the gallbladder

10 00 A M—Thayer Hall—Medical Clinic Amoebic Dysentery Presentation by Dr Percy A Brooke

Pohomyelitis Presentation by Dr James A Givan

Diseases of the Blood Presentation by Dr Raymond H Goodale

Heart Disease Presentation by Dr Frank B Carr

Diabetes Presentation by Dr A Wilson Atwood,

Participating in the Clinics Dr Elliott P Joslin, Boston, Dr Burton E Hamilton, Boston, Dr William Dameshek, Boston, and others

12 30 P.M.—Thayer Hall—Luncheon

Details for the other hospital clinics will be announced later

The luncheons at the various hospitals, following these clinics are to be served through the courtesy of the Worcester District Medical Society

MONDAY AFTERNOON, JUNE 4

2 30 O'Clock

Hotel Bancroft, Crystal Room

SECTION OF PEDIATRICS

Officers of the Section

Dr Gardner N Cobb, Worcester, *Chairman*

Dr James M Baty, Boston, *Secretary*

1 *The Use of the Ketogenic Diet in Pyuria*

By Dr Warren E Wheeler, Massachusetts General Hospital, Boston (By invitation.)

Discussion to be opened by Dr Fritz B Talbot, Boston

2 *Present Status of Vaccination Against Tuberculosis*

By Dr Clement A Smith, Children's Hospital, Boston (By invitation.)

Discussion to be opened by Dr Eliot H Luther, Westfield, and Dr Arnold Branch, Boston. (By invitation)

3 *The Role of the Streptococcus in So-called Sudden Death in Infancy and Childhood*

By Dr Sidney Farber, Harvard Medical School, Boston (By invitation)

Discussion to be opened by Dr Richard M Smith, Boston, and Dr Karlton G Percy, Chestnut Hill and Boston

4 *Pyogenic Infection of Bones and Joints in Infants*

By Dr William T Green, Children's Hospital, Boston

Discussion to be opened by Dr Frank R Ober, Boston, and Dr Henry W Hudson, Jr, Waban and Boston

MONDAY AFTERNOON, JUNE 4

2 30 O'Clock

Hotel Bancroft Ballroom

SECTION OF RADIOLOGY AND PHYSIOTHERAPY

Officers of the Section

Dr Charles W Blackett, Newtonville and Boston, *Chairman*

Dr Franklin P Lowry, Newton *Secretary*

1 *A Method of Reduction and Fixation of Intracapsular Fractures of the Femoral Neck*

By Dr Joseph H Fay, Melrose

Discussion to be opened by Dr Ralph D Leonard, Melrose and Boston

2 *The Conduct of the Convalescent Stage of Anterior Poliomyelitis*

Motion pictures showing a new method of muscle re-education

By Dr Harold D Corbusier, Plainfield, New Jersey (By invitation)

Discussion to be opened by Dr Frank R Ober, Boston

3 *Diverticulosis, Diverticulitis and Carcinoma of the Colon A Roentgenologic Discussion*

By Dr Ross Golden, New York, N Y (By invitation)

Discussion to be opened by Dr Richard B Cattell, Boston, Dr Merrill C Sosman, Boston, Dr Philip H Cook, Worcester

4 *Physical Therapy in the Treatment of Athletic Injuries*

By Dr Thomas K Richards, Boston

Discussion to be opened by Dr Otto J Hermann, Brookline and Boston

MONDAY EVENING JUNE 4

8 O'Clock

Hotel Bancroft, Ballroom

THE SHATTUCK LECTURE

By Dr Warfield T Longcope, Baltimore, Physician-in-Chief, The Johns Hopkins Hospital

Subject *The Importance of Disturbances in Nutrition in Oedematous States* (Illustrated by lantern slides)

Light refreshments will be served after the lecture

TUESDAY MORNING, JUNE 5

9 15 O'Clock

Chamber of Commerce Hall

SECTION OF SURGERY

Officers of the Section

Dr Ernest M Daland, Boston, *Chairman*

Dr Joseph H Shortell, Boston, *Secretary*

1 *Cancer of Rectum and Lower Bowel Case Problems and Methods*

By Dr Ernest L Hunt, Consulting Surgeon, Worcester City Hospital

Discussion to be opened by Dr F B Sweet, Springfield and Dr Benjamin H Alton Worcester

2 *Total Ablation of Thyroid Gland for Intractable Heart Disease Medical and Surgical Aspects*

By Dr Herrman L Blumgart, Boston, Associate Professor of Medicine, Harvard Medical School, and Visiting Physician, Beth Israel Hospital, and Dr David D Berlin, Boston, Assistant Professor of Anatomy, Tufts College Medical School, and Surgeon to Thyroid Clinic, Beth Israel Hospital

Discussion to be opened by Dr Howard M Clute of the Lahey Clinic, Boston, and Dr Robert C Cochrane, Surgeon-in-Chief, Second Surgical Service, Boston City Hospital

3 *Trans-Urethral Resection of the Prostate*

By Dr Herman C Bumpus, Jr, New York Recently at the Mayo Clinic, Rochester, Minnesota (By invitation)

Discussion to be opened by Dr Roger C Graves, Visiting Urologist, Carney Hospital, and Genito-Urinary Surgeon, Pondville Hospital, and Dr Walter D Bieberbach, Worcester, Urologist to Worcester City Hospital

4 *Management of Fractures About the Ankle Joint*

By Dr Clay Ray Murray, New York, Assistant Professor of Surgery, College of Physicians and Surgeons, Columbia University (By invitation)

Discussion to be opened by Dr Frederic J Cotton, Boston, Consulting Surgeon, Boston City Hospital, and Dr Charles L Scudder, Boston, Honorary Surgeon, Massachusetts General Hospital

TUESDAY MORNING, JUNE 5

11 30 O'Clock

Hotel Bancroft, Ballroom

ANNUAL MEETING OF THE SUPERVISING CENSORS

TUESDAY NOON

Hotel Bancroft, Ballroom

ANNUAL MEETING OF THE COUNCIL

Followed by the Cotting Luncheon to Councilors in the Chamber of Commerce Hall.

Other stated meetings in John Ware Hall, Boston Medical Library, 8 Fenway, at noon, on the first Wednesdays of October and February

TUESDAY AFTERNOON, JUNE 5

1 O'Clock

Chamber of Commerce Hall

A buffet luncheon will be served to Fellows who have tickets (Procurable at Registration Desk Price \$1 00)

2 30 O'Clock

Chamber of Commerce Hall

SECTION OF MEDICINE

Officers of the Section

Dr George R Minot, Boston, *Chairman*

Dr Herrman L Blumgart, Boston, *Secretary*

1 *The Social Conditioning of the Visceral Activities*

By Dr Abraham Myerson, Boston, Professor of Neurology, Tufts College Medical School, Director of Research, Boston State Hospital, Senior Visiting Neurologist, Boston City Hospital and Beth Israel Hospital

Discussion to be opened by Dr Lawrence K Lunt, Carlisle and Concord

2 *Cancer and the General Practitioner*

By Dr Henry Jackson, Jr, Chestnut Hill and Boston, Assistant Professor of Medicine, Harvard Medical School, Associate Physician, Thorndike Memorial Laboratory, and Junior Visiting Physician, Boston City Hospital, Physician, Pondville Hospital

Discussion to be opened by Dr P E Truesdale, Fall River

3 *Chronicity of Rheumatic Fever*

By Dr Homer F Swift, New York, Member of the Rockefeller Institute for Medical Research (By invitation)

Discussion to be opened by Dr Paul D White, Boston, and Dr Oliver H Stansfield, Worcester

4 *Tuberculosis as It Affects the Physician's Practice*

By Dr Henry D Chadwick, Boston, Massachusetts Commissioner of Public Health

Discussion to be opened by Dr Brace W Paddock, Pittsfield

TUESDAY EVENING, JUNE 5

7 O'Clock

Hotel Bancroft, Ballroom

THE ANNUAL DINNER

Fellows wishing to sit together at the dinner will please send their names to Dr Edwin R Leib, *Chairman of the Local Committee of Arrangements*, 36 Pleasant Street, Worcester, at the earliest possible date and proper reservations will be made. Tickets for the dinner should be obtained at the Registration Desk. The galleries of the ballroom will be reserved for ladies who wish to hear the distinguished after-dinner speakers

WEDNESDAY MORNING, JUNE 6

9 O'Clock

Chamber of Commerce Hall

SECTION OF OBSTETRICS AND GYNECOLOGY

Officers of the Section

Dr Joseph W O'Connor, Worcester, *Chairman*
Dr Thomas Almy, Fall River, *Secretary*

- 1 *Prolan Therapy in Abnormal Uterine Bleeding* (Illustrated by lantern slides)
By Dr Joe Vincent Meigs, Boston, Gynecologist

Discussion to be opened by Dr Frank A. Pemberton, Boston, Gynecologist and Dr Charles H Lawrence, Jr, Boston, Internist

- 2 *Intracranial Hemorrhage in the New Born from the Standpoint of the General Practitioner* (Illustrated by lantern slides)

By Dr P Brooke Bland, Professor of Obstetrics, Jefferson Medical College, Philadelphia (By invitation)

Discussion to be opened by Dr Alonzo K Paine, Boston, Obstetrician, Dr Richard S Benner, Springfield, Obstetrician, and Dr Randolph K Byers, Milton and Boston, Pediatrician

- 3 *Radium Therapy in Uterine Hemorrhages of Benign Origin—An Analysis of the End-Results of 150 Consecutive Cases* (Illustrated by lantern slides)

By Dr Louis E Phaneuf, Boston, Gynecologist

Discussion to be opened by Dr Samuel R Meaker, Boston, Gynecologist, and Dr Richard Dresser, Chestnut Hill and Boston, Radiologist

WEDNESDAY MORNING, JUNE 6

9 O'Clock

Hotel Bancroft, Crystal Room

SECTION OF TUBERCULOSIS

Officers of the Section

Dr Roy Morgan, Westfield, *Chairman*
Dr Donald S King, Boston, *Secretary*

Symposium on Measurement of Activity in Pulmonary Tuberculosis (Papers limited to eight minutes each)

- 1 *Symptoms*

Dr Harvey S Wagner, Barnstable County Sanatorium, Pocasset

- 2 *Physical Signs*

Dr Frank H Hunt, Boston Sanatorium, Mattapan

- 3 *X-ray*

Dr Olin S Pettingill, Essex County Sanatorium, Middleton

- 4 *Quantitative Tuberculin Tests*

Dr Theodore L Badger, Boston City Hospital

- 5 *Leucocyte Picture*

Dr Jacob Kaminsky, Middlesex County Sanatorium, Waltham

- 6 *The Monocyte-Lymphocyte Ratio*

Dr Gulh Lindh Muller, Rutland State Sanatorium

- 7 *Schilling Differential Count and Red Cell Sedimentation Rate*

Dr John W Cass, Jr, The Channing Home, Boston

- 8 *Discussion and Summary of the Whole Problem with Especial Reference to the Study of the Leucocyte Count in Pulmonary Tuberculosis*

Dr William H Ordway, Physician-in-Charge, Metropolitan Life Insurance Company Sanatorium, Mt McGregor, New York State (By invitation)

WEDNESDAY NOON, JUNE 6

Hotel Bancroft, Ballroom

ANNUAL MEETING OF THE SOCIETY

BUSINESS OF THE ANNUAL MEETING

A draft, second revision, of the By-Laws has been sent to every Fellow, under the terms of Chapter VI, Section 3, and Chapter IX of the By-Laws

WEDNESDAY AFTERNOON, JUNE 6

1 O'Clock

Hotel Bancroft, Ballroom

THE ANNUAL DISCOURSE

By Dr Lincoln Davis Boston, Consulting Surgeon, Massachusetts General Hospital, President, Boston Medical Library

Subject *The Objectives of Medical Progress*

WEDNESDAY AFTERNOON, JUNE 6

2 O'Clock

Chamber of Commerce Hall

Buffet Luncheon to all with tickets

Thus will end the Annual Meeting

SCIENTIFIC EXHIBITS

- 1 *Some Effects of Liver Extracts Injected Intramuscularly* By Dr William Parry Murphy, Boston, Instructor in Medicine, Harvard Medical School Illustrated by charts and moving pictures

- 2 *Postgraduate Medical Instruction in Massachusetts* By the Massachusetts Medical Society, Committee on Postgraduate Medical Instruction Dr Leroy E Par-

- kins, Boston, Secretary The past year's experience in postgraduate instruction will be shown in graphic form, together with an outline of next year's program.
- 3 *Polomyelitis—its pathology, epidemiology and after-care* By Dr A. T. Legg, Boston, Assistant Professor of Orthopedic Surgery, Harvard Medical School, Dr W. L. Aycock, Boston, Director of Research, Harvard Infantile Paralysis Commission, and Janet B. Merrill, Boston, Director of Physical Therapeutics, Harvard Infantile Paralysis Commission and Children's Hospital. In addition to statistical charts and models, a moving picture will be shown to illustrate the management of a case from the beginning of the orthopedic treatment.
 - 4 *The Modern Conception of Gonorrhea* By the American Social Hygiene Association and the Neisserian Medical Society of Massachusetts. Dr M. J. Exner, New York, N. Y. (By invitation.) There will be charts illustrating all the phases of diagnosis and treatment. This material has been prepared by Dr Edward L. Keyes, Dr Emily D. Barringer, Dr Erick Langer, Dr P. S. Pelouze, Dr Anson Clark and others. The exhibit won first honors at the American Medical Association meeting in 1933.
 - 5 *The Control of Diabetes* By the Metropolitan Life Insurance Company. Dr Louis I. Dublin, third vice-president and statistician, and the George F. Baker Clinic of the New England Deaconess Hospital, Dr Elliott P. Joslin, Boston, Medical Director. This will be a revision and enlargement of the exhibit shown at the American Medical Association meeting, illustrated by charts and lantern slides.
 - 6 *Treatment of Intractable Congestive Failure and Angina Pectoris by Total Ablation of the Normal Thyroid Gland* By Dr H. L. Blumgart, Boston, Associate Professor of Medicine, Harvard Medical School. There will be charts demonstrating the technique of treatment, the therapeutic results, biochemical and electrocardiographic studies, and moving pictures of the various aspects of thyroidectomy. The exhibit will represent the work of Dr Blumgart, Dr A. A. Weinstein, Dr David Davis, Dr J. E. F. Riseman, and Dr D. D. Berlin.
 - 7 *Fungi Pathogenic to Man* By Dr John G. Downing, Newton and Boston, Assistant Professor of Dermatology, Tufts College Medical School, W. H. Weston, Professor of Cryptogamic Botany, Harvard University, and Sarah M. Cousins, Harvard School of Biology. (By invitation.) The organisms from the simplest forms to the most complex pathogens will be shown growing in culture, together with microphotographic enlargements of their appearance in culture and in tissue lesions, and photographs of the characteristic lesions produced.
 - 8 *Lobar Pneumonia, Its Treatment, and the Neufeld Method of Pneumococcus Typing* By the Massachusetts Department of Public Health, Division of Communicable Diseases, Dr G. W. Anderson, Waban and Boston, Director, and Dr Roderick Heffron, Boston, Director of Pneumonic Study. In addition to the graphic presentation of the results of the recent special pneumonia study in this state, there will be demonstrations of the technique of rapid pneumococcus typing.
 - 9 *Arthritis* By the Massachusetts Department of Public Health, Division of Adult Hygiene, Dr H. L. Lombard, Newton Centre and Boston, Director. There will be gross specimens demonstrating the various types of arthritic pathology, with statistical charts prepared by the Division of Adult Hygiene.
 - 10 *Cancer* By the Massachusetts Department of Public Health, Dr G. W. Taylor, Brookline and Boston, Surgeon at Pondville Hospital, Dr Shields Warren, Boston, Pathologist to Pondville Hospital, and Dr H. L. Lombard, Newton Centre and Boston, Director, Division of Adult Hygiene. Lantern slides, photographs and x-rays of characteristic lesions showing results of various therapeutic measures, and statistical charts of the incidence, curability and mortality rates of cancer in its several forms.
 - 11 *Silicosis and Tuberculosis in Granite and Foundry Workers* By the Massachusetts Department of Public Health, Division of Tuberculosis, Dr A. S. Pope, Newtonville and Boston, Director. The results of the study made by the special Industrial Disease Commission of 1933.
 - 12 *Social Aspects of Medicine* By a Committee of the Harvard Medical School on the Social Aspects of Medicine, and the Chiefs of the Social Service Department of the Boston City Hospital, the Massachusetts General Hospital, the Beth Israel Hospital, and the Children's Hospital. This exhibit illustrates the value of an understanding of the social aspects of medicine to diagnosis, prognosis, therapy and prevention of disease.

CENSORS' MEETINGS

The Censors for the several districts will meet for the examination of applicants for fellow-

ship on the first Thursdays of May and November

The Censors for the Suffolk District will examine applicants residing in that district and also applicants who are non-residents of Massachusetts

Applicants for fellowship should apply to the Secretary of the District Society of the district in which they reside (have a legal residence) at least two weeks before the date of a given examination, taking with them their diplomas

TREASURER'S NOTICE

Assessments, payable in advance, should be paid to the District Treasurers, or, in the case of non-residents, to the Treasurer

Assessments were due January first For the convenience of Fellows who have not yet paid, such assessments will be received for the Treasurer at the Registration Desk in the lobby of the hotel

SECRETARY'S NOTICE

All communications as to membership, especially changes of residence and address, should be sent to the Secretary, who keeps a constantly corrected official list of the Fellows and their addresses

THE JOURNAL

The *New England Journal of Medicine*, the official weekly organ of the Society, will be sent only to Fellows who have paid their assessments, and to such Retired Fellows as may apply for it Address communications to the Managing Editor of the *Journal*, Dr Walter P Bowers, 8 Fenway, Boston

Society Headquarters,
8 Fenway, Boston

COMMERCIAL EXHIBITS

Booth No

- 1—The P L Rider Company, 9 Norwich Street, Worcester, Massachusetts

The P L Rider Company, jobbers of general hospital supplies will display a complete line of Instruments and Specialties L H Marsden of Worcester will be in charge

- 2—The Medical Protective Company, Wheaton, Illinois

Provides professional protection exclusively A F Fox and F G Lockwood in charge of the exhibit, will be at your service

- 3—Tailby-Nason Company, Boston Massachusetts

Manufacturers of Nason's Palatable Cod Liver Oil The Giant Cod and photographs of the Lofoten Fisheries in Norway will be an interesting part of the exhibit.

- 4—The Kellogg Company, Battle Creek, Michigan

Manufacturers of ready-to-eat cereals and Kaffee Hag Coffee Kaffee Hag Coffee will be served and all delegates are invited to call at the booth have a sample and see the caffeine exhibit Mary I Barber, Director of Home Economics will be in charge

- 5—General Electric X-Ray Corporation, 624 Beacon Street, Boston, Massachusetts

Manufacturers of x-ray and electro-medical apparatus Shock proof x-ray apparatus, x-ray films an Inductotherm and minor equipment will be displayed J W Moulton of Springfield will be in charge

- 6—The Brookhill Laboratories, Genesee Depot, Wisconsin

A new method of preparing Concentrated Acidophils Milk is to be introduced R E Sampson of the Brookhill Agency, Boston, will be present to explain details of manufacturing processes

- 7—Kilham & Maleod, 56 Central Avenue, Lynn, Massachusetts

Exclusive New England distributors for Lepel High Frequency Laboratories of New York A complete line of physical therapy equipment will be displayed showing the latest development notably the new combination quartz ultra violet lamps and cold ultra violet lamps, a high powered diathermy equipment in one combination unit also the latest miniature quartz ultra violet lamps for internal use An all purpose electrode surgical unit capable of doing all types of electrode surgery including transurethral prostatic resection and combination short wave diathermy and electrode surgical units

- 8—Westinghouse X-Ray Company, Inc Long Island City, New York

Manufacturers of electro-medical apparatus A new line of our x-ray accessories together with the Westinghouse new Model G" Endotherm will be displayed

- 9—Lederle Laboratories, Inc, 511 Fifth Avenue, New York, New York

This exhibit will present the more important Biological and Pharmaceutical Products which they manufacture Among the Biological Products which will be shown are Pol len Antigens which for twenty years have proved successful in controlling attacks of hay fever Poison Ivy Extract in almond oil for Rhus Dermatitis Antipneumococcic Serum for pneumonia the single dose Toxoid for diphtheria prevention Tetanus-Gas Gangrene Antitoxin for prophylaxis and Staphylococcus Toxoid for the prevention and control of staphylococcal infections

Their pharmaceuticals include Solution Liver Extract Parenteral for pernicious anemia Solution Liver Extract Oral Ferric Ammonium Citrate in capsules Cod Liver Oil Concentrate Tablets and standardized Whole Leaf Digitalis Tablets

- 10—Winthrop Chemical Company, Inc, and H A Metz Laboratories, Inc, 170 Varick Street, New York, New York

At the Winthrop-Metz booth you will find a special exhibit of some of the newest products

of this firm Special attention is called to Novaldin the analgesic with a wide safety quotient Myorgal, vasodilator for angina, Synodal, for injection therapy of peptic ulcer, Diadrast, radiopaque agent for intravenous urography Literature gladly supplied on these, as well as Curtasal, Avertin, Luminal, Theominal, Phanodorn, Pyramidon Novocain, Salyrgan, Omnadin and the Salvarsans

11—Gerber Products Company, Fremont, Michigan

Any information desired concerning the Gerbers Strained Cereal, Vegetables and Prunes will be gladly given Leaflets and booklets are available for use in your practice or for your own information Gerber Products are used both for infant feeding and in therapeutic diets and literature along those lines will be supplied.

12—Petrolagar Laboratories, 8134 McCormick Blvd, Chicago, Illinois

Each tablespoonful of this new type of Petro-lagar contains the physiological equivalent of the U S P dose (2 cc) Fluid extract Cascara Sagrada U S P There is a sample of Petro-lagar with Cascara for every visitor

13—Massachusetts State Pharmaceutical Association, 20 Glen Road, Newton Centre, Massachusetts

A line of U S Pharmacopoeial and National Formulary preparations will be displayed

14—R B Davis Company, Hoboken, New Jersey

Cocomalt, the scientific food concentrate that supplies a rich calcium, phosphorus and Vitamin D content in a delicious form, is again being exhibited Physicians report an ever-increasing use of Cocomalt in the diet. Interesting scientific data available Scientific information will be given and questions on Cocomalt will be answered

15, 16—Merck & Co, Inc, Rahway, New Jersey

Manufacturers of fine prescription chemicals In addition to such well known therapeutic agents as Tryparsamide, Bismosol, Stovarsol, and Pyridium, several interesting new preparations such as Mecholin, for the treatment of paroxysmal tachycardia and peripheral vascular diseases will be exhibited

17—Physician-Dentist Service, Inc, 224-225 Park Square Building, Boston, Massachusetts

Finances the patient for the doctor or hospital A complete explanation of their plan will be available J R Watson, Assistant Treasurer, will be in charge

18—The DeVilbiss Company, Toledo, Ohio

Manufacturers of medicinal atomizers and vaporizers A complete line of medicinal atomizers and vaporizers will be on exhibit. A prominent feature of this display will be the new DeVilbiss Nasal Guard, which eliminates any excess pressure in the nasal passages during prescribed self treatment with an atomizer E Manning of the Boston Office will be in charge

19—Crosbie-Macdonald Insurance Agency, 79 Milk Street, Boston, Massachusetts

Specializing in protection for members of the Massachusetts Medical Society, against reputation, good name, working ability, instruments your life and retirement can be provided for They will be glad to help solve your problems

20—Moore & Company, Inc, Worcester, Massachusetts

21—S M A Corporation, Cleveland, Ohio

22—Hynson, Westcott & Dunning, Charles and Chase Streets, Baltimore, Maryland.

23—Campbell X-Ray Co of Boston, 100 Sudbury Street, Boston, Massachusetts

X ray and electro-medical apparatus made in Boston will be displayed

24—Mead Johnson & Company, Evansville, Indiana

A complete line of infant diet materials including Dextrin Maltose Meads Newfoundland Cod Liver Oil, Meads Viosterol in Oil 250 D, Meads 10 D Cod Liver Oil Meads (A D) Viosterol in Halibut Liver Oil 250 D (Liquid and Capsules), Meads Halibut Liver Oil Meads Brewers Yeast Powder, Meads Brewers Yeast Tablets Pabulum, Meads Cereal, Sobee, Meads Powdered Protein Milk, Meads Powdered Lactic Acid Milk, Powdered Whole Milk Alacta, Reolac and Casco will be displayed

26—The Mellin's Food Company, 177 State Street, Boston, Massachusetts Manufacturers of Mellin's Food

27—Charles W Broadbent Company, 665 Huntington Avenue, Boston, Massachusetts

A complete line of Medical, Surgical and Hospital Supplies will be displayed Charles W Broadbent will be in charge

28, 29—E F Mahady Company, 851-857 Boylston Street, Boston, Massachusetts

The new Burdick SU2 Endo-thermic Knife utilizing a blended current comprising patented cutting and coagulating features will be displayed Also the new Baxter's Intravenous Solutions, the Sciolytic Flash emergency and operating light, and many other new items of interest to the medical profession

30—Horlick's Malted Milk Corporation, Racine, Wisconsin

Manufacturers of Horlick's the Original Malted Milk. A complete line of Horlick's the Original Malted Milk, powder and tablet forms natural and chocolate flavors will be displayed. Dr J A Denking of Boston will be in charge

31—Association of Certified Milk Producers of Metropolitan Boston, 1106 Boylston Street, Boston, Massachusetts

The methods and technical control procedures pursued in the production of Certified Milk will be presented Certified Milk is produced under medical supervision to fulfill the most exacting requirements of the medical profession for clean, safe milk of optimum nutritional values

32—Davies, Rose & Co, Ltd, 22 Thayer Street, Boston, Massachusetts

While Pili Digitals (Davies Rose) needs no introduction, there are perhaps those who are

not familiar with this firm's other preparations Messrs Mansfield and Fleming will be in charge

33—The E L Patch Company, Stoneham Post Office, Boston Massachusetts

The various Patch specialties will be displayed

Booths A and B—The Stetson Shoe Company, South Weymouth, Massachusetts

Manufacturers of high grade shoes for men and women A complete line of Stetson Shoes will be displayed. C C Mason will be in charge

Booth C—The J B Lippincott Company, Philadelphia, Pennsylvania

The J B Lippincott Company will exhibit an unusual line of new and standard medical surgical pharmaceutical and nursing books Among the most outstanding is Peham and Amreich—'Operative Gynecology,' in two volumes This atlas is beautifully and extensively illustrated by large drawings showing each operation step by step Practically all of them are beautifully and accurately colored

Kirschner—Operative Surgery, in two vol

umes This book immediately became known as 'The Color Surgery' because of the wealth of detailed colored illustrations It contains a great number of items that cannot be found in any other Operative Surgery and is well worth the most careful scrutiny

There is a new edition of the well known doctor's time saver, Lippincott's Quick Reference Book and an entirely new and most inexpensive work on 'The Treatment of the Commoner Diseases' by Lewellys F Barker, and the new idea in personal post graduate work instruction at home supplied from the Pittsburgh Diagnostic Clinic as a Supplement to the famous International Clinics

In the nursing field there is an entirely new work by Solomon on 'Pharmacology, Materia Medica and Therapeutics for Nurses' and a number of new editions of the standard nursing text

TUFTS ALUMNI LUNCHEON

A Tufts Medical Alumni luncheon is scheduled for Monday, June 4th, at 12 30 P.M. at the Hotel Bancroft, Worcester

Careful perusal by the Fellows of the Society of the program set forth should arouse that degree of enthusiasm which would prompt designation in one's engagement book of the three days of the Annual Meeting Every section is well arranged to present important educational material, and the accepted estimate of a practitioner is based on his attendance at medical meetings

Last year the scientific exhibit was unanimously approved as a very interesting and instructive feature of the session That arranged for the Worcester meeting presents significant advancements in medicine The commercial exhibits should interest every doctor, for the best pharmaceutical skill is shown in the various products displayed, and the mechanical and scientific contributions to a doctor's armamentarium are examples of the ingenuity of the manufacturers Cordial invitations are extended to visit these exhibits

The most valuable vacation period for the summer will be that at Worcester June 4, 5, and 6

Do not miss the Annual Dinner, for the social features are important adjuncts to scientific meetings Your President will be especially pleased to see you there, for thereby you may show your appreciation of his devotion to your interests He has secured speakers who will entertain you

The general and local committees have worked diligently to provide for your entertainment

Read the program carefully a second time and mark those features which you find therein of interest

NEW ENGLAND SURGICAL SOCIETY

COMPRESSION FRACTURES OF VERTEBRAL BODIES*

BY JOHN P. BOWLER, M.D.,† AND JOHN F. GILE, M.D.†

COMPRESSION fractures of vertebral bodies are not an uncommon result of accidents in the fields of both recreation and industry. The work of Osgood and Rogers here in Boston, preceded by that of Brackett, Mixter and Wilson, and Sever, as well as by Cotton's earlier report of a case, should be sufficient reason for not bringing this discussion to the particular location of this meeting. But, based on our own experience, we believe that the practical importance of a discussion of compression fractures still lies in the frequency of failure of their early recognition, particularly when so commonly unaccompanied by signs of cord involvement. Complicating as they may an apparently trivial and not seriously disabling injury, the early symptoms may be ascribed to "back sprain", "muscle pull", "lumbago", and excite in either the patient or physician or both, no indication or perhaps justification for complete roentgenologic investigation, without which the diagnosis cannot be made. The delayed recognition forced by the continued or progressive development of symptoms results in diagnosis at a time when later pathological changes have rendered an originally simple problem less amenable to treatment.

This introduction well describes our own experience. Not many years ago we experienced the discomfiture of having a late diagnosis of compressed fracture established on a case dismissed by us as back sprain. In 1932 we treated nine cases of compressed fracture, which raised the question of the increasing prevalence of the condition and caused a review of our hospital cases dismissed with diagnosis of back sprain. Of twenty-two such records, nineteen included sufficient x-ray data to indicate a correct classification so far as exclusion of fracture was concerned. In three cases, however, there was definite history of injury of a type and sufficiency to have caused fracture, the disability could have accompanied fracture, x-rays were not taken, and strapping of the back constituted treatment. The fact that these three cases have not returned to us may or may not support the hope that the diagnosis was correct.

The mechanism involved in compression fractures is determined by the structure and motions of the spinal column which functions as two segments: the superior long flexible portion supporting the head and carrying the tho-

rax and abdomen and the inferior or short rigid portion carrying the lower extremities. The spinal column is comprised of superimposed vertebrae bound together by strong ligaments and held in alignment by strong active musculature. It is important to recall here that the posterior or lamina ligaments as their name, *ligamenta flava*, implies, are yellow, elastic tissue which gives more and more under tension, does not tend to rupture—that they are not fibrous check ligaments as in the normal joint anatomy. The vertebrae articulate anteriorly through their bodies by the interposition of fibrocartilaginous disks and posterolaterally through articular processes. Movements exceeding the wide normal range unduly compress the vertebral disks or cause fracture of related bodies. Each vertebra consists of an anterior mass of spongy bone, the body, and a strong posterior portion, the neural arch.

The normal curvatures of the spine, responsible for the extreme elasticity of the column, result from the shape of the vertebral bodies as well as that of the intervertebral disks, both of which are thicker on the convex side of a curvature, and best developed in those regions of greatest flexibility of movement. In general, the greatest mobility occurs where normal flexion is the greatest, as in the cervical and lumbar regions. In the lumbar segment, due to the relative fixation both above and below and the immense leverage of the trunk working against the pelvis, occurs the great majority of compression fractures as a result of violent, exaggerated flexion. Such trauma is spent on the large cancellous vertebral body, resulting in a degree of compression commensurate with the force and the absence of subluxation or dislocation as a means of escape. Complete escape, meaning dislocation without fracture, is extremely rare, one interesting instance, followed by complete reduction, we shall show. The compression vice is maintained by the resistance of the strong neural arch and ligaments posteriorly and the common anterior ligament anteriorly.

Fractures of the spine are placed in two definite groups by the presence or absence of cord involvement resulting from the presence and extent of dislocation accompanying the fracture. Of forty-four cases of fractured spine treated by us in the past ten years thirty-six have been of the compression type involving one or more vertebral bodies. Of these thirty-six cases twenty-nine were of a simple compression type without sufficient dislocation or damaging complications to produce cord signs. In 1932, encoun-

*Read at the Annual Meeting of the New England Surgical Society September 30, 1932 at Boston.

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tering nine such cases we were impressed with the correctness of the general belief that such fractures were rapidly increasing because of both the increasing prevalence of automobile accidents and the improved x-ray technique and facilities as offering less possibility of incorrect diagnosis. Our yearly incidence however does not indicate any unusual variation within the period under discussion. The incidence of these cases in our records ranges from three to six cases each year, increasing to six in 1926 and to nine in 1932. Of the ten-year total of forty-four twenty-five cases have occurred in the last five years.

The seven cases complicated by dislocation are the only cases in which there was cord involvement. This varied from paresthesias of one lower extremity in one case to complete paraplegia in six cases with varying degrees of recovery, and with two deaths. Probably of no particular significance these two deaths to which our fatalities were confined followed fracture dislocation of the eleventh dorsal vertebra, in one of which autopsy showed death from pulmonary embolus one week after injury and in the other puncture of the hemiazygos vein by the fractured vertebra and rupture of the liver. In these seven cases, fracture was confined to a single vertebra in four, multiple vertebrae were involved in three. Not included in our list of spinal fractures but of interest to report in connection with the mechanics of spinal injuries is one case of complete dislocation of the spine without fracture. Herzkooff of Los Angeles in discussing such a case states that after a careful review of the literature he found no other case reported. We should like to report a complete anterior dislocation of the spine without fracture occurring at the twelfth dorsal vertebra with overriding downward over the bodies of the first and second lumbar vertebrae. The patient was a man of forty-eight years of age, injured in an automobile accident. X-rays taken one year after injury show a complete reduction. The patient is now living, five years after injury, with a complete paraplegia.

We have mentioned these cases associated with dislocation as a result of a more extensive action of the force causing the spinal injuries. This reduces our report to twenty-nine cases of uncomplicated compression fractures of the vertebral body with no cord involvement and with which associated injuries are rare. In the case of the patient in shock or with paraplegia there is not much likelihood of an atmosphere of trivial injury and casual management.

Automobile accidents have been credited as the origin of the increasing prevalence of compression fractures. A list of injuries involving violent hyperflexion is, in our experience led by falls from trees, staging, etc., resulting either in the individual's landing feet first in a position of flexion of the trunk or falling across a raised object. Of our thirty-six cases eighteen, or just

one half, resulted from such falls, eight, or less than one fourth from automobile or train accidents, four were caused by a blow on the back with heavy pressure and occurring in logging accidents, three from tobogganing, and three of miscellaneous origin. Those resulting from tobogganing could easily be overlooked. In passing the case mentioned earlier as not diagnosed by us occurred from this very cause. There was no accident collision or "spill." The compression resulted from hyperflexion on the rebound from a not-unusual bump with the patient sitting on the toboggan with thighs flexed and knees extended an ideal set-up for such an injury if once considered. Oddly enough we have yet to encounter our first case resulting from skiing—but not strange when one recalls the mechanics of the injuring force and the fact that flexion is the position of an efficient skier and that most falls are backwards or sideways in a position of spinal extension.

The location and extent of the fracture in these thirty-six cases are of considerable interest from the standpoint of the mechanics of the

LOCATION OF COMPRESSION FRACTURES

Single

Vertebra	No Cases	%
VIII D	1	
XI D	4	22
XII D	1	
I L	3	
II L	7	
III L	2	78
IV L	6	
V L	3	

Dislocation with cord involvement (3)—11%

Multiple

Vertebrae	No Cases	%
Dorsal	5	55
Lumbar	3	33
Dorsolumbar	1	12

Dislocation with cord involvement (4)—45%

injury and because of the relationship of multiple fractures to the site. Of the thirty-six cases twenty-seven involved but one vertebral body with the inclusion of each vertebra from the eleventh dorsal to the fifth lumbar, inclusive, and with the involvement of the eighth dorsal in one instance. Of these twenty-seven cases twenty-one or seventy-seven per cent occurred in the lumbar spine, the second lumbar leading with fracture in seven cases. Six single fractures of one body were confined to the dorsal region, the body of the eleventh leading with four. In the cases of multiple fractures, of which there were nine the extent was from the fifth dorsal to the fifth lumbar. In those cases there was involvement of two to four bodies. In all but four the fractures concerned contiguous vertebrae, the escaping vertebrae between the two segments of fracture varying from two to six in number. The above table gives

the incidence of fracture as occurring in the various bodies

The age and sex incidence of these patients is of no significance, occurring with the same incidence as in general traumatic cases, twenty-five per cent were in women, and the ages of the entire group varied from fifteen to eighty-one.

To return to our twenty-nine cases of simple compression fracture without cord involvement, the diagnostic symptoms are not definitely pathognomonic of fracture. The constant symptoms are tenderness in the back, usually well localized over the spinous processes of involved vertebrae, and pain which usually follows immediately after injury and is continuous until a corrective position is maintained. The pain is located in the general region of the tenderness and may be girdle-like in character. There may be swelling at either side of the site of fracture. Kyphosis in the early and uncomplicated case is not present. The diagnosis is possible only by x-ray and the important issue in arriving at the diagnosis is a history of the manner of injury, a recollection of the mechanics of its production, a definite insistence with the patient of the possibility of the condition without further symptoms, and an insistence on complete roentgenological investigation.

The interval after injury which has occurred before some cases have been seen is significant of the casualness with which both physician and patient may regard a lame back following injury. Nineteen of our cases were seen within twenty-four hours. In thirteen the time averaged two and one half weeks, and in the four remaining, this interval was three months, seven months, eighteen months, and four years. These late cases had been treated with a short period of rest in bed, strapping, and finally came in with a complaint of persisting backache. The position of comfort in these injuries is moderate flexion and absence of lordosis, and is to be kept in mind in suspecting the diagnosis and in considering the transportation of such a patient.

The treatment obviously reverses the mechanics of the injury, and consists of hyperextension, for which many devices, tables, and maneuvers have been utilized. As a result of the muscle spasm which is present in the early cases immediate extension involves considerable traction on the abdominal muscles resulting in pain and extreme discomfort, often followed by nausea, vomiting, and, at times by distention which may become serious. If extension is accomplished in a gradual manner, much of this discomfort can be avoided. The placing of sandbags and built-up slats under the patient has been one practical method for the institution of this extension. Except in the case seen immediately after injury we have found the early application of a cast to be often unsuccessful usually producing such a degree

of discomfort as to force its discontinuance. We have found the simplest method of producing gradual extension to consist of reversing the patient, head for foot, on a standard Gatch bed and using the knee elevator as a pressure producing extension of the spine, this mechanism lends itself very well to gradual application. We have extended the use of this method to a period of from ten to fourteen days, at which time all spasm has disappeared. The patient is then put on the ordinary Bradford frame in a canvas hammock and a body cast is applied with the spine in satisfactory hyperextension, taking care that padding in the region of the injury is sufficient to prevent undesired pressure over the area of fracture and to maintain extension later when the cast may be less well-fitting. Such casts are worn from ten to twelve weeks with the patient ambulatory after the sixth or eighth week. On removal of the cast a Taylor brace is applied, which is worn for the balance of one year following injury, during the last six months of which the patient can usually return to ordinary work. We realize that there is a considerable difference of opinion as to the length of time that a patient should be immobilized with such an injury. In spite of some proponents of a much shorter period of immobilization, we feel safer on the program as stated. In the cases complicated by dislocation, with the early period of hyperextension has been combined leg or head traction or both as indicated. In general we have found the higher the fracture in the spinal column the more difficult the satisfactory reduction.

It would seem that no discussion of this type of fracture would be complete without reference to Kuemmel's disease. A considerable amount of literature on this entity has accumulated since Kuemmel's first article in 1891. It must be borne in mind that Kuemmel's articles preceded the practical use of the x-ray. The following sequence of events was described as necessary to make such a diagnosis:

- 1 Injury to the spine
- 2 Period of disability
- 3 Latent period
- 4 Recurrence of pain and disability due to crushing of a vertebral body
- 5 Arrest of the process by proper treatment

In other words, to establish a diagnosis of Kuemmel's disease, an x-ray must be taken immediately after injury and found negative, and the patient later develops the subsequent course of events. Bahn believes there is a microscopic dissolution of the continuity of the bone, which, without treatment, degenerates, absorbs, and collapses. Jones of Liverpool believes the fracture is reduced by manipulation of moving and therefore does not show, but without proper treatment crushes under the body weight and

the ensuing events occur. There seems to be but little doubt that so-called Kuemmell's disease is the late result of an unrecognized and therefore untreated crushing of the vertebral body.

CONCLUSION

1 Our cases of compression fracture of vertebral bodies without dislocation have been accompanied by no signs of cord involvement.

2 Such fractures resulting as they may from an apparently trivial injury may escape early recognition.

3 Kuemmell's disease is the late result of an unrecognized and therefore untreated case of such fracture.

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DISCUSSION

DR. EZRA A. JONES Manchester N H. *Mr President and Gentlemen*—There are two points that are brought out in this paper which are extremely interesting to me. One is the failure to make a diagnosis in cases of compression fractures without cord involvement and the other is the recovery of these patients without any fixation operation.

I think the failure to make a diagnosis is due to two factors. First the failure to get a definite history as to how the accident occurred and the second is the inadequate x-ray examination. Compression fractures always occur with the spine in flexion and if it is found that flexion of the spine could have occurred during the accident we should be suspicious of a compression fracture. Slight compression fractures can seldom be diagnosed in an anteroposterior x-ray and lateral views should always be taken.

The use of the Rogers' bed makes the treatment very simple but if that cannot be had hyperextension can be made with a blanket roll placed under the point of fracture. I have been using for several years the Whitman frame which I believe has many advantages. It is inexpensive, mobile and quite effective. It can be made by any plumber and consists of a heavy gas pipe about six to eight inches longer than the patient and as wide as the patient's shoulders at either end. It is curved upward from the bed to any degree desired and at the point where pressure is desired the pipes are placed to within two inches of each other for about four to five inches at the point where the fracture occurred. The effectiveness of this is that the

pressure comes on the transverse processes and not on the spinous processes. While on this frame, x-ray may be taken and any desired amount of hyperextension may be secured. After four weeks in this position a plaster corset is applied and this is worn for about four months when a back brace is instituted. It is rare to find a case treated this way which does not go on to recovery.

DR. JAMES W. SEVER Boston Mass. I am very much interested in this matter of compression fractures of the spine because a number of years ago when I was doing more industrial surgery than now, I picked up a great many which had been unrecognized and untreated. I was not the first nor the only one but I missed many. My imagination wasn't sufficiently good at that time to visualize what should be done for them and I was content to treat these cases with some support or perhaps do something along the lines they had been having or give them more treatment than they needed or had had.

It remained for others with a better visualization of the problem to sense that hyperextension was the thing that was really needed particularly in the acute cases and you of course are familiar with Danlo's method of forcible correction and later Daviss (in Erie) under an anesthetic with immediate correction of the wedging of the body and later the excellent work that William Rogers has done with his fracture frame as it is called. Since we have been shown the path that we should take with those cases the problem has not been a particularly difficult one so far as correction of the deformity goes.

It is perfectly amazing to see how the accordion will open with hyperextension properly applied and with restoration in many cases to complete symmetry and anatomical outlines of the injured body particularly of course in the lumbar region.

The medical profession so far as the pathology of the spine has gone has made more advances in the last five or ten years than have ever been made so far as I know. In the old days of railroad spines, or contusions of the spine before x-rays people were content to go on perhaps with traumatic neurosis or lame back and nobody thought much about it. Perhaps Kuemmell's disease was more frequent than it is now and I think most of Kuemmell's works were written before the advent of the x-ray, so perhaps he couldn't tell that there had been a primary injury to a body of the vertebra.

The early treatment as we followed it and as I think Dr. Gile has said should be hyperextension but hyperextension immediately applied is peculiarly uncomfortable and distressing and oftentimes leads to rather grave symptoms. Many of these people have a good deal of abdominal distention which is disturbing because you don't know whether they have an intestinal or a bladder rupture, and in those cases they will not stand a hyperextension at all. Even after that condition has quieted down forcible hyperextension applied may bring back symptoms which are extremely uncomfortable and painful.

In the old days when a person had a fractured back everybody knew it and when the diagnosis was made of fractured spine a person was immediately permanently incapacitated. The injury was associated with a section of the cord, dislocation of the cord and paraplegia and with symptoms which persisted because of the cord injury. The term

fractured back today except in the terms of psychology is not particularly a serious condition. With the x-ray you can see compression fractures of the vertebrae or those fractures which Dr. Gile has shown which should not be called compression fractures so much as sprain fractures where corners are pulled off and where there is no frank compression of the body itself.

Today a fractured back simply means that there is a fractured lamina, or a pedicle, or a transverse process, or a sprain fracture of a corner. Even a fracture of the vertebral body doesn't mean prolonged illness or disability, and the reason is not only because of the x-ray studies but also of the sense with which these problems have been met in terms of treatment.

There is one other thing which I should like to speak of and that is in the older people, who have marked hypertrophic arthritis, and who have injuries to the back from falls, from stagings from roofs from wagons, or whatnot. I have been unfortunate enough to make a diagnosis in several of these cases where there has been severe accompanying hypertrophic arthritis of the spine in compression fracture—there are severe distortions and asymmetrical conditions of the vertebral bodies which on top of a severe injury to the back, are mistaken even by the x-ray man as a compression fracture, and on review of the case the diagnosis has to be changed to "aggravated by hypertrophic arthritis" as the Compensation Commissioners like to say.

I have here something devised by one of the orderlies at the Boston City Hospital. It is an arrangement of a flexible steel plate. It is put under the patient and there is a ratchet arrangement here, that can be gradually turned up. I think it is known as the "City Hospital Hyperextension frame." The felt pad can be removed or padded, as you choose. Every day the plate can be turned up a bit, increasing hyperextension which is a better way than to do an immediate forcible correction. The apex of this plate should be under the deformity, and it can be readily and easily adjusted without discomfort to the patient. With this apparatus we can have hyperextension without danger of abdominal disturbance to the point where the x-ray shows an excellent restoration of symmetry of the compressed vertebrae.

DR ROBERT B OSGOOD Boston Mass. I think that this is the most refreshing paper on compression fractures of the spine to which I have ever listened. It has an enormous amount of common sense in it and practical simple methods of dealing with such lesions. It emphasizes the one important thing in relation to accidents to the spine, namely, that suspicion is the key that opens the door to diagnosis. We must think of this possibility always in injuries of the back, especially when we do not know the exact mechanism of the accident. This is very frequently the case.

It is refreshing particularly because not one word has been said about fusion operations for compression fractures of the spine and I think it should rarely be said because it is obviously not necessary in the cases dealt with properly soon after the injury.

I think Dr Sever is wrong. Dr Davis gave the first clear exhibition of what could be done by manipulation. Dr Dunlop and many other people have advised hyperextension. Dr Davis deserves the credit of first demonstrating the possibility of opening up as Dr Sever so well called it, the accordion.

There is one thing I should like to bring out very

definitely in this connection and this is that in the older cases it is very common after the diagnosis has been made, to advise a fusion operation because of disability and pain. If you study these cases carefully, you will find that a certain proportion of them have a perfectly good internal fixation by nature (drawing on the board) something like 33 per cent as I remember it of a large number of cases reported in St. Louis. The fusion operation would not then need to be done for the sake of fixing this region, because it is already fixed and yet these cases often have pain and discomfort. The reason they have discomfort, as Wallace has well shown is the fact of the postural defect in the spine caused by the wedge shaped vertebra and the discomfort does not come from the fracture, but from the disturbed posture.

You may in the older cases, without doing a fusion operation, certainly always before you do a fusion (as you may be obliged to do in workingmen) produce by hyperextension compensatory curves above and below the seat of the fracture in the spine which will reduce the postural defect and relieve the pain without any operative procedure.

I happen to have had to deal with a great many of the older cases where the lesion has been unrecognized and a correction of the postural defect by means of compensatory curves above and below has entirely relieved all symptoms without a fusion operation.

I think Dr Gile and Dr Bowler are to be warmly commended for the whole attitude of the paper and for the points that they have so well brought out.

DR JAMES W SEVER. May I ask Dr Gile a question? I should like to ask in relation to the border line cases in compression fractures where there has been a frank compression fracture of the body and where there are at first and oftentimes persisting for some time, certain neurological symptoms in the legs whether it is advisable in those cases, early or late, to do a laminectomy.

DR JOHN F GILE. I said nothing about the fusion operation because I don't know anything about it in the first place never having done one and we haven't found the necessity for doing it. By correcting putting on a proper brace or a cast, even in the old cases you get relief, so I have found no occasion for using it.

The suspicion of a flexion accident was brought out by Dr Osgood in an article some years ago and is more or less the basis of our repeating it here. The suspicion of it is the thing to keep in mind. Suspect that there was a flexion and you have an idea of what may have happened.

Since this paper was written a patient last week came to the x-ray man with a diagnosis from a doctor of some internal disease around the cecum and wanted a barium enema. Dr Sycamore, with the story of the man's having had a fall last March took an x-ray and found nearly complete compression fracture of the vertebrae.

We have not done laminectomies in these cases. With complete paraplegia we have felt that we would do no good—perhaps more radical treatment is indicated. The paraplegias and slight neurological symptoms have cleared up with traction.

THE NECESSARY REQUIREMENTS IN A MINIMUM
DIET FOR INFANTS AND CHILDREN

BY JOHN LOVETT MORSE, M.D.*

AT this time when so many children are underfed and undernourished and when it is also so important that they be properly fed at as low a cost as possible, it seems worth while to review briefly what their nutritive needs are and how they can be met.

The minimum diet must contain proteins, fats, carbohydrates, salts and vitamins and must also provide the requisite number of calories. Its bulk must also be taken into consideration. Attention must likewise be paid to its palatability and digestibility points which are unfortunately frequently overlooked or forgotten. The relative importance of the caloric value of foods was undoubtedly overestimated in the past. Absolutely, however, it is as important as it ever was. The importance of the vitamins is now being relatively very much overemphasized although, of course, no diet is complete which does not contain a sufficient amount of them. They are really no more important and necessary than certain amino-acids or even common salt, which are seldom mentioned.

It is stated in the reports of The White House Conference that "the correct procedure in constructing a diet must consist in first attempting to provide a complete assortment of the substances which sustain the chemical structure of the body and then adding combustible material in such amounts as will provide the necessary energy." This statement is undoubtedly true. Nevertheless, I am going to follow the custom, usual in the past, of taking up the caloric needs first, and considering the other needs later.

CALORIC NEEDS These, in brief, consist of (1) The basal metabolic needs, which gradually diminish with age and, measured in body weight, are less in the fat than in the thin. (2) The needs for growth, which are greatest in infancy and in the prepubertal period. (3) The needs for muscular activity, which must necessarily vary enormously. (4) The needs for waste which are relatively unimportant. It is evident how difficult it is to estimate these needs even to get average figures. It is far more difficult to estimate them for the individual.

Most tables merely approximate what their makers think children ought to take and are consequently not of great value. Those which are based on what well, growing children actually eat are probably more nearly correct. Figures based on weight are probably less accurate than those based on height. According to the findings of The White House Conference, the caloric

needs of boys gradually increase from thirty-five calories per inch at two years to fifty-five at seventeen years, while the needs of girls vary from thirty-nine to forty from six to fifteen years and between thirty-five and thirty-seven before and after this time. Approximate average figures as to the caloric needs of infants and children, based on those given by The White House Conference are as follows:

Infants Sex has no influence

1 month	500	Calories
6 months	800	"
1 year	1000	"
2 years	1200	"

Children	Boys	Girls
2-3 years	1200	1225
4-5 "	1525	1450
9-10 "	2250	2000
11-12 "	2325	2175
13-14 "	2625	2400
14-15 "	2900	2375

The figures given by Holt and Fales, modified by my own experience, are, I think, more nearly correct for children of twelve years or over. These are, for boys of twelve years, 2750 C, and for girls of the same age, 2950 C, at fifteen years, boys, 3750, and girls, 3700.

Finally, it must always be remembered, as stated in the proceedings of The White House Conference, that "each individual child has his own caloric needs which may vary from that of others of the same age and size. This optimum is such that the child grows properly, feels well, is mentally and physically alert and adjusts himself to his environment. Standards of food intake are of value in improving the welfare of children, but should not be used to the exclusion of the consideration of the problem of the individual child."

PROTEINS As is well known, protein is the only one of the food elements from which old tissues can be replaced and new tissues built. No diet is adequate which does not contain enough protein to do this. Furthermore, the supply must be continuous, because proteins—i.e., amino-acids—are not retained in excess of the immediate requirements. The proteins are changed into the amino acids before they are absorbed. Most of these amino acids are interchangeable, but at least four of them are not. These are tryptophane, lysine, cystine and histidine. They cannot be synthesized in the body but must be taken in the food. Fortunately there is very little chance of an insufficiency of any of them, unless barely possibly of cystine, if a baby is on the breast or a baby or child is drinking milk. Practically, it is not necessary to consider them. Incidentally, on the whole,

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animal foods provide a better selection of amino-acids than do vegetable

The storage of protein for growth will be defective on diets which do not contain sufficient calories, as some of the protein will be burned for energy. Proteins may yield glucose, fatty acids and fat. As much as fifty per cent may be converted to glucose. Protein is a wasteful source of energy. This is shown by a comparison of the specific dynamic action, i.e., the "cost of digestion", of the various food elements, which is 25 per cent of the fuel value of fat, five per cent of that of the carbohydrates and ten per cent of that of the proteins.

The minimum protein need is the minimum amount of protein required to replace used tissues, build new, and pay the cost of digestion, assuming that the diet is otherwise sufficient, so that protein does not have to be used as fuel. The figures as to the minimum protein needs are probably more accurate for infants than for children. The breast-fed baby gets from 18 grams to 23 grams of protein per kilogram of body weight daily. This is equal to from seven to nine per cent of his total caloric intake. Various studies seem to show, however, that 15 grams per kilogram are enough. Babies taking the modern whole milk mixtures get from 26 grams to 58 grams of protein per kilogram, or from twelve to twenty per cent of their total caloric intake. This is probably too much, as has already been explained.

The figures as to the protein needs of children are conflicting and probably not very reliable. Holt and Fales found that from six years on, healthy, growing children took about 26 grams per kilogram. Various figures, which I have analyzed, seem to show protein needs of 35 grams per kilogram at four years, 25 grams at eight years, and two grams at twelve years. These amounts are probably larger than necessary. Other estimates are that from one to five years ten to fifteen per cent of the total calories should be provided by proteins, and in older children, five to ten per cent.

The chief symptom of protein insufficiency is failure to grow properly. If there is a marked insufficiency, nutritional edema may develop. In such cases, however, it is often very difficult to know how much of the edema is due to the protein insufficiency and how much to an excess of the other food elements and to a deficiency of vitamins, both of which are usually associated with an insufficiency of proteins. There are no pathognomonic symptoms of an excess of proteins. It is intriguing to think that an excess may injure the liver and kidneys, but, so far as I know, there is no proof that it does. Almost all that can be said is that proteins are an uneconomical source of energy, and that, therefore, it is wasteful to use them for this purpose.

CARBOHYDRATES The carbohydrates comprise the sugars and starches. Both must be broken down into monosaccharides before they can be absorbed. It must not be forgotten in this connection that raw starch is digested with much difficulty because of the indigestibility of the cellulose which surrounds the starch granules. Starch which is not broken down cannot, of course, be absorbed and, therefore, cannot be utilized. All the carbohydrates serve the same purpose in nutrition. This is mainly as a source of energy. Nevertheless, a certain amount of carbohydrate is necessary for the maintenance of life and to prevent ketosis. This minimal need is three grams per kilogram of body weight for infants and from eight to ten grams for children. The amount of carbohydrates needed to supply energy depends somewhat on the amount of fat in the food, which also serves mainly as a source of energy. Within reasonable limits they can be used indiscriminately for this purpose. In a general way, everyone agrees that the optimal amount of carbohydrates for the infant is from ten to fourteen grams per kilogram of body weight and from eight to ten grams for children. This means from forty to sixty per cent of the total caloric intake.

Carbohydrate insufficiency never occurs except in starvation. An excess of carbohydrate in the diet is, however, probably the most common mistake made in feeding children. The usual symptoms are indigestion and loss of appetite, if there is a great excess, glycosuria. There are no characteristic symptoms of an excess of carbohydrates. Those which are often attributed to it are really due to an insufficiency of the other food elements, especially of protein, and a deficiency of salts and vitamins.

FATS The fats serve mainly as a source of energy. Some form of fat, however, enters into the composition of every cell of the body. A certain amount is, therefore, necessary for the maintenance of life and the building of tissue. There are no figures as to what this amount is. Fat is stored. If necessary, it can be synthesized from carbohydrate and protein. The caloric value of fat, by weight, is the highest of the food elements—93 vs 41 calories per gram. It has the lowest "cost of digestion". The normal breast-fed baby gets from four to six grams of fat per kilogram of body weight daily, or fifty per cent of its total calories. A baby on the modern whole milk mixtures gets only fifteen to thirty per cent of its total calories as fat. This seems to me to be too little. Children on an ordinary diet take from three and one half to four grams of fat per kilogram of body weight, or about thirty-five per cent of their total calories. No one knows whether this is optimal or not. Much more than this is probably not fully utilizable and quite probably interferes with the utilization of calcium. Many of the fats are also

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The symptoms of fat insufficiency are not very definite. In the main, they are simply those due to an insufficient caloric intake. Except in starvation it is very improbable that not enough fat would be taken to carry on the vital processes. The symptoms which are usually attributed to an insufficiency of fat are really due to an insufficiency of the vitamins which are carried by the fats, namely, vitamins A and D.

Finally, to sum up, the optimal diet for children appears to be one in which protein makes up from ten to fifteen per cent of the total caloric intake, carbohydrate from forty to sixty per cent and fat from thirty to thirty-five per cent. The cheapest diet which will meet the nutritive needs is one in which ten per cent of the total caloric intake is provided by protein, sixty per cent by carbohydrate and thirty per cent by fat.

VITAMINS These accessory food factors are unquestionably necessary for the maintenance of health and normal growth. Their absolute importance cannot be overemphasized. Their relative importance is, however, being stressed altogether too much, largely because of the marvelous advertising and high-pressure salesmanship of the manufacturers of foods and drugs who have taken advantage of one of the few opportunities to make good money in these hard times. We physicians have only ourselves to blame for being exploited. The general public cannot be blamed because they cannot be expected to understand what is going on. The mistake which is being made is in assuming that unless a great effort is made to give the vitamins, babies and children will get an insufficient amount. Another mistake which is being made is in attributing many symptoms to avitaminosis which are in reality due to something else. Children still have sore eyes from other causes than a lack of vitamin A, loss of appetite may be due to indigestion as well as to an insufficiency of B. In general, in spite of all that has been written to the contrary, and although I know that I shall be reviled for saying so, I still think that the average child in the average American family runs very little chance of dodging a sufficient supply of the vitamins. The case is of course, very different among the very poor and among those who eat a very one-sided diet. Babies on the present low fat mixtures may also perhaps get an insufficient supply of A and D, especially if they are kept indoors. Furthermore with the present-day methods of feeding, all babies that are not breast-fed are very likely to get an insufficient amount of C. It is very fortunate that an excess of the vitamins does no harm. If it did many of our babies and children would certainly be in a parlous state. The manifestations of a marked insufficiency of the various vitamins are now pretty well known.

What is needed is a better knowledge of the symptoms of a slight insufficiency.

Vitamin A An insufficiency of this vitamin causes a specific change in the epithelial tissues. Stratified epithelium is substituted for the normal in various parts of the body, notably in the respiratory, alimentary and genito-urinary tracts. It is argued that this change results in an increased susceptibility to infection. Theoretically, it should. The best controlled clinical studies, however, seem to show that it does not. It would seem as if it ought to cause some disturbance of normal function. Certain changes in the skin have been described in infancy. A marked insufficiency causes night blindness and xerophthalmia. Vitamin A is stored. The limit of the capacity to store is not easily reached.

The common sources of vitamin A are milk, butter, eggs, animal and fish oils, and the green vegetables. Cereals and muscle tissues contain but little. Lard, vegetable fats and oils do not contain it.

Vitamin B This vitamin is made up of a number of different factors. The two most important ones are known as B-1 and B-2, or G. B-1 is the antineuritic and G the antipellagric or antidermatitic. The whole subject of the subdivisions of B is most confusing.

A marked deficiency of B-1 causes beriberi. A moderate insufficiency is said to cause anorexia, hypertonicity, and impairment of growth. There is probably nothing specific about the impairment of growth. This is presumably simply the result of the diminished intake of food because of the loss of appetite. Much has been said recently about loss of appetite in infancy and childhood as a symptom of an insufficiency of vitamin B in the diet. I am inclined to think that in the vast majority of instances the loss of appetite is not due to an insufficiency of vitamin B but to some unrecognized disease, improper hygienic surroundings or care, or some disturbance of the digestion from some other defect in the diet. At any rate, I have never been able to restore the appetite by increasing the amount of vitamin B in the diet.

The principal sources of B-1 are whole grains, wheat germ, yeast, the glandular organs, and the yolk of egg. Other sources are tomatoes, raw cabbage, fresh spinach and the legumes. Milk contains relatively little.

Vitamin G (B2) A marked deficiency of G causes pellagra. A moderate deficiency results in various forms of dermatitis, and is said to cause loss of appetite and impairment of growth. What has been said as to loss of appetite and impairment of growth in relation to B-1 applies also to G.

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It is hardly necessary to discuss the sources of vitamin C. Every baby gets either orange juice or tomato juice nowadays, whether it needs it or not. Scurvy is, however, a medical curiosity in the breast-fed. It was very uncommon in babies fed on raw cows' milk, although of course, it is well known that the amount of the antiscorbutic vitamin in milk varies with the time of year and the food of the cows. Now, when all babies are fed on pasteurized, boiled or dried milk, an antiscorbutic is a necessity.

Vitamin D—the antirachitic vitamin. So much has been written about this vitamin, rickets, fish oils, viosterol, irradiated foods and ultraviolet irradiation during the last few years that I, for one, am tired of it all. The medical journals are all cluttered up with advertisements of antirachitics and my mail is full of samples. Fortunately, I can usually keep the detail men out. There is no doubt, of course, that an insufficiency of vitamin D or of its activator, the ultraviolet rays, will result in the development of rickets. It undoubtedly also has something to do with the development of spasmodic hiccups and with defective development and caries of the teeth. There is also no doubt that vitamin D will cure these conditions. It must be remembered, however, that in all these conditions a proper supply of available Ca and P is as necessary as the vitamin. It is also true that a slight amount of rickets is not a serious condition. Too much stress is being laid upon it. Furthermore, as Eliot and her co-workers have recently shown, the clinical diagnosis of mild rickets is often wrong.

There are many sources of this vitamin. Fish oils contain the most. Animal fats contain some, vegetable fats little or none. The amount in egg yolks varies. The grains contain none. Oatmeal is said to do harm. Cows' milk contains little. It, like other foods can be irradiated. Vitamin D can also be introduced into milk by feeding irradiated yeast to the cows. The ergosterol in the skin can be activated by exposing the body to the sun's rays or to those from various lamps.

Fortunately there is practically no danger of getting an excess of vitamin D clinically, although experimentally serious results have been produced by an excess. It is lucky that this is so, because, if it were not, a good many babies that are taking various fish oils, viosterol, irradiated foods, and going about naked would be in serious difficulties.

In this part of the world it is probably advisable to see that babies get vitamin D in some form during all but the summer months. In fact, there is no doubt that, by and large, in spite of all that I have just said, babies have been much benefited by the general use of vitamin D during the last few years. There seems to be no valid reason, however for giving it to children as a routine procedure.

To sum up. Practically, if a child gets a reasonable amount of milk, an occasional egg, some meat, and whole grains, it is very unlikely to lack vitamins. If the milk is not raw, a baby needs an antiscorbutic. It is a good thing for a child to have some vegetables as an additional safeguard. Spinach and other "leafy" vegetables are not, however, as necessary as many would lead us to believe. It is advisable to give babies vitamin D in some form during the winter months.

SALTS. It is impossible to discuss the salts in detail in a paper of this sort. The subject is altogether too complicated and has too many ramifications. The food must contain certain salts in sufficient amounts. Furthermore, these salts must be present in such a form that they can be absorbed and utilized. There may be plenty of them and yet they may be practically useless because of the form which they are in or because of the presence of or lack of other factors. For example, the absorption of Ca and P depends on the relative proportions of each and the reaction of the intestinal contents, the utilization of Ca depends on the amount of vitamin D and the activity of the parathyroids, and so on. Furthermore, the availability of the salts also depends on the various amounts of the various food elements—fats, carbohydrates and proteins—in the diet. In general, an excess of one of the salts is unimportant, unless it interferes with the absorption or utilization of some other salt. The excess is simply not absorbed or it is promptly eliminated. A deficiency of one or more of the salts is the important thing.

The salts which are of practical importance are those of Ca, P, Fe, and I. We can safely forget copper, cobalt and manganese! It is very difficult to state just what the needs for these elements are because of the complicating factors just mentioned. Roughly, a child needs one gram of Ca and one and half grams of P per day. It is hard to see how a child that is taking milk, eggs and cereal can fail to get enough.

A retention of one half a milligram of iron a day is required during the first six months of one milligram during the rest of the first year, and of two milligrams during the rest of childhood. In general it is still safe to assume that the store of iron in the liver of the average infant is sufficient to make up for the deficiency of iron in the milk during the first six months. Milk is of course, notoriously low in iron. Eggs, prunes and green vegetables are the best source. The relative importance of the latter has, however, been much exaggerated. This has been shown by Schlutz and his co-workers in a recent paper.

The need for iodine is one tenth of a milligram per day. In this part of the country it does not need to be considered. This is especially true when we remember that almost every baby and child in this vicinity is taking syrup of hydriodic acid.

WATER. It is hardly necessary to take up the water needs in detail. It must be a very unusual occurrence for either a baby or a child not to get enough water to cover its metabolic

needs. In many instances, however, it would be better for it to get more.

SUMMARY. I have endeavored to show what a child needs and must have in its diet in order to be well and to grow satisfactorily. It is evident, it seems to me, that the individual child needs just so much of the various food elements, salts and vitamins, no more, no less. If he takes more, it is wasted, if he takes less, he must suffer for the lack of it. The minimum diet is, therefore, the one diet which meets the child's needs that is the ideal or optimal diet. If he gets less than this, he will not starve to death and may not show any striking evidences of disease, but he cannot thrive and develop as he should. This minimum diet should be the aim and guide of those who are prescribing the diets for the poor and undernourished children. This diet may vary very much in cost according to the amount of knowledge and skill which are used in its selection and preparation. It need not be, and ought not to be, expensive. In fact, it may and should cost very much less than many diets which do not meet the nutritive needs nearly so well.

THE USE OF ERGOTAMINE TARTRATE IN MIGRAINE*

BY WILLIAM G. LENNOX, M.D.†

DRUGS used for the relief of migraine are in most part sedatives, burying the pain but not righting the condition responsible for the pain. Moreover, with many patients the headache seizures are so severe that even strong sedatives do not give relief. Any non-sedative drug which in the majority of patients will cut short a severe migraine attack deserves thorough clinical trial and careful experimental study.

Ergotamine tartrate (which is sold under the trade name of "Gynergen") was called to my attention by Dr. Stephen J. Maddock, who had used it with dramatic results in a patient with migraine whose attacks had not been relieved by any of many treatments tried. A search of the literature disclosed several communications on the subject from European authors. Maier¹ in 1926, in an article dealing with the effects of ergotamine tartrate on the sympathetic nervous system, says that he has used it successfully in cases of pruritus migraine and epilepsy. Cornil² recites a case whose migraine headaches could be stopped by the oral administration of the drug. There are also case reports in theses which cannot be consulted, viz., Déclaire³ of

Bordeaux in 1926 and Cantils of Montpellier in 1929.

The first and also the largest series of cases has been that of Tzanck^{4, 5}. In 1928 he reported 12 cases and in 1931 101. In his first report he states that of eight cases of typical and chronic migraine resistant to all previous treatment, all had been favorably influenced. Of three other patients with almost continuous headache, two had been almost completely cured and one had discontinued treatment because of painful menstruation. One other patient with ophthalmic migraine had been relieved of headaches but not of the ocular symptoms. Tzanck's analysis of results in his last reported series of 101 cases is disappointingly brief and indefinite. He states that 15 out of the 44 members of the group which he calls "typical" had been "cured" and the condition of nearly all ameliorated, and that results were even more favorable in patients having a migraine state. By this term he means attacks which are less clear cut and violent. Some patients were apparently "cured", some had attacks at longer intervals, some developed a tolerance for the drug requiring larger and larger doses for relief. Tzanck gave the ergotamine by mouth, from one to as high as six mg. a day, or subcutaneously 0.5 mg. twice a day. Besides treating individual attacks he speaks of the prophylactic use of daily doses. Trautmann⁶, at about the same time as Tzanck

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There are many sources of this vitamin. Fish oils contain the most. Animal fats contain some, vegetable fats little or none. The amount in egg yolks varies. The grains contain none. Oatmeal is said to do harm. Cows' milk contains little. It, like other foods can be irradiated. Vitamin D can also be introduced into milk by feeding irradiated yeast to the cows. The ergosterol in the skin can be activated by exposing the body to the sun's rays or to those from various lamps.

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In this part of the world it is probably advisable to see that babies get vitamin D in some form during all but the summer months. In fact, there is no doubt that, by and large, in spite of all that I have just said, babies have been much benefited by the general use of vitamin D during the last few years. There seems to be no valid reason, however, for giving it to children as a routine procedure.

To sum up. Practically, if a child gets a reasonable amount of milk, an occasional egg, some meat, and whole grains, it is very unlikely to lack vitamins. If the milk is not raw, a baby needs an antiscorbutic. It is a good thing for a child to have some vegetables as an additional safeguard. Spinach and other "leafy" vegetables are not, however, as necessary as many would lead us to believe. It is advisable to give babies vitamin D in some form during the winter months.

SALTS It is impossible to discuss the salts in detail in a paper of this sort. The subject is altogether too complicated and has too many ramifications. The food must contain certain salts in sufficient amounts. Furthermore, these salts must be present in such a form that they can be absorbed and utilized. There may be plenty of them and yet they may be practically useless because of the form which they are in or because of the presence of or lack of other factors. For example, the absorption of Ca and P depends on the relative proportions of each and the reaction of the intestinal contents, the utilization of Ca depends on the amount of vitamin D and the activity of the parathyroids, and so on. Furthermore, the availability of the salts also depends on the various amounts of the various food elements—fats, carbohydrates and proteins—in the diet. In general an excess of one of the salts is unimportant, unless it interferes with the absorption or utilization of some other salt. The excess is simply not absorbed or it is promptly eliminated. A deficiency of one or more of the salts is the important thing.

The salts which are of practical importance are those of Ca, P, Fe, and I. We can safely forget copper, cobalt and manganese! It is very difficult to state just what the needs for these elements are because of the complicating factors just mentioned. Roughly, a child needs one gram of Ca and one and half grams of P per day. It is hard to see how a child that is taking milk, eggs and cereal can fail to get enough.

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Besides the nausea and vomiting experienced by many of the patients, three complained of dyspnea and a sense of constriction in the chest. One of these patients, Mrs. T., who received 0.5 mg intravenously, had, along with this, symptoms of angina, and an increase in blood pressure from a preinjection level of 142 systolic and 90 diastolic, to a height of 180 systolic and 160 diastolic. Although Meakins and Scriver¹⁵ gave as high as 18 mg by mouth daily for 20 days to patients with hypertension, it would seem wise to use ergotamine cautiously in patients with vascular disease. Following injection, there is usually increase in systolic and decrease in pulse pressure and bradycardia. After the headache ceased, a feeling of fatigue or muscle soreness was common. One patient believed that menstruation was made more profuse. Pregnancy is, of course, a contraindication.

What has been said applies to the treatment of headaches after they have begun. Can ergotamine be used to prevent the seizure? Unfortunately the danger of ergotism makes the daily administration of ergotamine over a prolonged period questionable and most patients do not have attacks with such regularity that treat-

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Certain of our observations temper enthusiasm concerning long range prospects. Patients whose attacks are terminated when treatment is first instituted may later on fail, at times, to obtain relief, or else the interval between attacks may be shortened. There is some evidence that in epilepsy the use of antispasmodic drugs may act only as a dam, postponing but not, in the long run, preventing attacks. The same may be true in certain severe cases of migraine. At any rate, evaluation of the clinical worth of the drug must await a longer experience.

The experience of the eight patients whose headaches were frequent and incapacitating who had had no relief from the usual drugs and who began to use ergotamine more than six months ago will be given briefly. The first six patients are women.

A housewife aged 54 has had frequent incapacitating hemicrania with nausea and vomiting since childhood. Besides various medical treatments she had submitted to removal of her gall bladder and of her cervical sympathetic nerves without even temporary relief. Headaches which lasted two to three days recurred every week or ten days. In addition in recent years she has had almost daily moderate headaches for which she uses headache powders. Ergotamine tartrate has been used subcutaneously for 18 months. Each time it stops the headache but on some occasions the pain has returned and there has been a tendency for attacks to recur more frequently. She now takes 0.5 mg subcutaneously almost daily. Her suffering is greatly reduced but she is still in the coils of this disease.

A high school Latin instructor aged 36 with a history of migraine since childhood has an attack about once a week which lasts for two days. Vomiting which is profuse was formerly followed by relief of headache but is not now. She has very poor posture and musculature, visceroptosis and constipation. Each of the several dozen attacks which have assailed her in the last nine months has disappeared about 75 minutes after subcutaneous injection of 0.3 mg of ergotamine tartrate. Vomiting is violent. After the headache subsides she is weak and does not regain her strength before the next attack occurs. The interval between headaches has not changed. The individual attacks have been robbed of their terror but her general situa-

reported the use of ergotamine tartrate in 30 cases of migraine. The results are not tabulated. The author merely states that, except in individual instances, one or two mg of the drug by mouth would begin to relieve the headache in about one-half hour, and that it was without effect in headaches associated with organic brain injury. An indifferent agent was given first in order to rule out the factor of suggestion. Targhetta⁷ reported successful termination of attacks in one case. Ignelzi⁸ had favorable results in six cases. He gave the drug intramuscularly in 0.5 mg doses. Kottmann⁹ reported treatment in five patients. Subcutaneous medication relieved each attack. Little success attended oral or rectal administration. One patient, however, who had monthly headaches at the time of menstruation, took six mg of ergotamine by mouth daily for five days before headache was expected, and for four months had no attack. Riley¹⁰, in his monograph on migraine, states that Tilney recommends ergotamine tartrate, either alone or combined with bellafoline.

Mignot¹¹ has no cases to report but reviews the literature, naming the various medical conditions in which ergotamine has been used, and discussing the dosage.

These authors do not mention serious untoward results from the use of ergotamine tartrate. The drug has been used extensively by obstetricians and gynecologists to control uterine hemorrhage, and by internists in the treatment of exophthalmic goiter, glaucoma, hypertension, auricular tachycardia, and pruritus of hepatic or of renal origin. Zorn¹² detailed four cases (one his own and three from the literature) in which use of ergotamine tartrate was followed by symptoms suggestive of beginning gangrene of the extremities. Oginski¹³ reported a case of puerperal sepsis in which six drams of fluid extract of ergot and 22 mg of ergotamine were given in a period of fourteen days. The patient developed gangrene of the feet. Three patients with exophthalmic goiter in which cerebral vascular accidents occurred in the course of treatment were reported by Labbé¹⁴ and his associates. In these various reports, it is not clear that the injections were mainly responsible. In addition to these grave sequelae, authors speak of nausea and vomiting and sometimes of precordial pain which follows administration of the drug.

Because of the favorable reports in the literature as well as the surprising results in my own preliminary trial of the drug, I have, in the past eighteen months used ergotamine tartrate for all migraine patients who have been willing to experiment with it*. The experience is too short and the cases too few to make de-

tailed analysis profitable. I shall give such general results and experiences as will aid those who wish to make trial of the drug.

To date, ergotamine tartrate has been given to 45 patients (6 men and 39 women) while they were suffering from a headache of the migraine type. Abrupt termination of the headache in question occurred in 40 of the 45 patients. Of the remaining patients, three had no relief whatsoever, two patients had no immediate relief but the attack was apparently shortened by two days.

In migraine, emotional factors often play a prominent part. Hence, an attitude of skepticism on the part of the clinician toward apparent immediate results is essential. Perhaps "suggestion" and not medicine stopped the pain. In order to minimize suggestion, patients were warned that they were to be given the ergotamine (which sometimes helped headaches) as an experiment. Most of them considered this just another straw to be grasped at. The uniformity of the time interval between injection and relief, the fact that this interval was different for intravenous and subcutaneous injections (which difference patients did not expect), the fact that in the past other drugs and procedures had not been even temporarily effective for most of these patients, and, finally the absence of relief from the injection of water (tried in a few patients), argued against suggestion as the explanation for the relief.

Of course, a certain small proportion of patients will obtain relief in the first trial of any new medicine or procedure. For nearly 90 per cent of migraine patients to obtain abrupt release from pain with the initial use of a drug is outside my experience. To some of the patients, the dramatically abrupt and complete termination of the headache, the sudden release from a state of misery, seemed almost miraculous. In the experience of these patients an attack once aborted rarely returned. Unlike hypnotics, the relief persisted beyond the period of action of the drug. After the pain had disappeared, there was usually a feeling of lassitude. The following description of events from a patient's report is fairly typical.

"The headache began to make its appearance about four o'clock in the afternoon and gradually increased in severity until about seven o'clock when I was quite sure I was in for a regular one and so decided to make use of 'Gynergen'. I had it injected (0.5 mg subcutaneously) into my right arm and went to bed. A half an hour previous to this I had consumed a generous dinner as I was as usual very hungry. After being in bed for about fifteen minutes I began to feel very nauseated and at regular intervals for about twenty minutes I vomited continuously. Being somewhat exhausted I fell asleep and slept until about 3 A.M. On waking to my great surprise and relief the headache had completely vanished. I felt extremely tired, as if I had had a very active day out-of-doors but it was a pleasant feeling of fatigue and I turned over and slept until about 7:30 A.M. I was able to

*The ergotamine tartrate (Gynergen) used in these trials was supplied by the Sandoz Chemical Works of New York City. Seven of the patients were treated by a colleague, Dr. T. J. C. von Storch. Dr. Stephen Maddock, Dr. H. S. Forbes, or Dr. Philip Solomon.

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tion is, at present, no better than when treatment was started.

A postgraduate college student of 32 years has had incapacitating headaches lasting two to five days since adolescence, the frequency in recent years being once or twice a month. Each of the attacks treated in the last year was aborted, although she has not taken an injection for every headache because of the unpleasant gastric symptoms. In recent months, the interval between attacks has been greatly increased, possibly as a result of dietary treatment.

A bank official, aged 44, has had headaches at about monthly intervals for 11 years. With each attack she has been away from her office under morphine medication for from two to six days. In the past 15 months, each of her attacks has been terminated by an injection of ergotamine, so that each time she has lost no more than a day from work. Headaches are somewhat more frequent than in the pretreatment period.

A housewife, aged 41, who conducts a beauty parlor, has had severe headaches since her marriage, 21 years ago. They come about three times a month, each lasting 24-48 hours. There are also other mild headaches, not migrainous in type, which come frequently but irregularly. She has had mild hypertension for years, and six years ago had an infarct of a kidney. She is the patient already mentioned, who has anginal symptoms after intravenous or subcutaneous injections. She has been under observation for a year. Although each injection gives abrupt relief, her cardiovascular symptoms have forced resort to oral administration. This method is not nearly so effective but 2 mg shortens the period of incapacity. The patient's "ordinary" headaches are not helped by ergotamine. In the last six months, probably as a result of a vacation, she has had but few attacks.

A housewife and physician has had incapacitating headaches lasting two to three days since girlhood. A headache always accompanies menstruation and may appear in an interval also. She has taken ergotamine for nearly two years—except during the nine months of pregnancy when she was free of headaches. Each headache has been aborted. The interval between headaches is reduced to ten days or two weeks.

A male physician of 47 years for the last three years has had attacks of right hemiparesis, coming two to five times a week, each attack lasting two to six hours. The diagnosis in this case (the only one of the series) is questionable. He does not have nausea or vomiting. There is localized tenderness of the scalp and the pain radiates into the right arm. Attacks were uniformly aborted for three months by ergotamine tartrate taken either by mouth (the method preferred by the patient) or by injection. In the last three months, however, repeated trial has been without avail.

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On the basis of this preliminary experience it seems probable that patients with frequently recurring and very severe headaches may not

find permanent help in ergotamine tartrate. Those mildly affected, who obtain relief from one of the sedatives, will not care to change. But many persons in a middle group, who have attacks of moderate severity and who do not get relief from the usual remedies, may find ergotamine tartrate a godsend. The distracted physician to migraine patients has a new weapon in his armamentarium. These remarks refer only to the medicine as a palliative, giving symptomatic relief for individual attacks. The prevention of attacks, the "cure" of migraine is a different matter. The successful use of a drug should never displace efforts to correct underlying physical or emotional abnormalities.

DISCUSSION

What is the mechanism by which, on occasion, ergotamine tartrate so decisively puts the pain of migraine to flight? Among other actions, the drug stimulates the contraction of smooth muscle and depresses the activity of the sympathetic nervous system. In the latter respect, it is the antagonist of adrenalin. The authors who have been quoted accept the theory of vascular spasm as the cause of migraine and assume that ergotamine paralyzes the motor sympathetics and thereby relieves the spasm and the pain. On the other hand, one might assume that small doses of ergotamine act on sensory nerves with elimination of painful stimuli but without necessarily altering the calibre of vessels and the cerebral blood flow. In this connection, the relief of pruritus by ergotamine tartrate is suggestive. The time interval between injection and relief is the same for both pruritus and headache. As yet unexplained is the fact that after subcutaneous injection, blood pressure changes and uterine contractions begin almost at once but relief of headache does not begin for nearly an hour.

In the case of one of our patients, we have therapeutic evidence against the exclusive importance of the sympathetic nervous system. She is the patient already mentioned, who had complete bilateral sympathectomy by an excellent neurosurgeon in Baltimore. The operation did not influence headaches, but ergotamine aborted each attack. With the sympathetic pathways obliterated, how did the ergotamine act?

Does ergotamine help only patients with migraine? This question of specificity is important for etiological studies. Trautmann⁶ and Kottmann⁷ state that ergotamine does not influence non-migrainous headaches. Indeed, the latter contends that if ergotamine is not effective the patient is vagotonic. In our experience, however, ergotamine may terminate headaches which cannot be classed as migraine.

Certainly, the theory of the mechanism by which the drug works requires experimental testing. We are interested in ergotamine tartrate principally because of our hope that study will

disclose the physiological mechanism by which it affords such abrupt relief. If we can learn why it stops a headache perhaps we may learn why the headache started, and thus have a basis for more rational treatment. A group of us are conducting a clinic for patients with migraine at the Boston City Hospital and carrying out a coöperative attack on the problem. The physiological effect of ergotamine tartrate on patients, especially as regards cerebral circulation, will be the subject of future communications.

CONCLUSIONS

Ergotamine tartrate has been given by intravenous or subcutaneous injection to 45 migraine patients while they were having a headache.

Abrupt termination of the initial attack treated occurred in 40 of the 45 patients. Eight of the patients had had frequent incapacitating headaches for many years had not found relief by other drugs or treatment and have used ergotamine tartrate for six months or longer. Seven of these have had almost uniform relief for individual attacks. Of these seven four are having attacks at more frequent and three at less frequent intervals than before medication was started.

Study of the mechanism by which ergotamine tartrate so often gives such dramatic relief is in progress.

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THE PARENTERAL ADMINISTRATION OF PARALDEHYDE FOR THE CONTROL OF PAIN AND CONVULSIVE STATES

BY ALLEN S. JOHNSON, M.D.*

PARALDEHYDE was introduced by Cervello in 1882 but its use as a hypnotic has been greatly hampered by reason of its disagreeable odor and taste which may be constantly apparent to the patient for twenty-four hours after administration. Rectal administration has only partly overcome this difficulty as the rapid and persistent elimination by the lungs gives rise to considerable discomfort. Because of these drawbacks the drug might have fallen into disuse were it not for the rapidity of its action and the large margin of safety between the hypnotic and the fatal dose. Five to 10 cc diluted with water or some other vehicle represents the usual hypnotic dose by mouth or rectum. The lethal dose on the other hand is probably not less than 50 cc though reports of fatal paraldehyde poisoning are difficult to find. Bastedo¹ states that death has occurred from 60 cc given by rectum but also reports a case that recovered after the administration of 100 cc. Sollmann² says "Its acute toxicity is low so that one hundred grams produced only very prolonged sleep." I have safely given 60 cc intramuscularly in the course of twenty-

four hours to relieve the pain of carcinoma of the bladder which could no longer be controlled by morphine. The safety of paraldehyde obviously lies in the fact that it is rapidly eliminated and does not depress the circulatory and respiratory systems until very high concentrations have been reached. But the unpleasant characteristics of the drug have limited its use in the treatment of pain and to the control of delirium tremens where effectiveness and safety of action are more important than the aesthetic objections of the patient.

In 1912 Noel and Souttar³ reported the intravenous use of equal parts of paraldehyde and ether in normal saline. "Deep anesthesia" may be very rapidly produced,—hypnotic effect excellent. It is well to give with an amount of ether. The action of the drug is rapid hence best given diluted. 5-15 cc of paraldehyde is mixed with an equal quantity of ether. This mixture is dissolved in 150 cc cold solution of sodium chloride (1%) in water. Inject the solution cold or at not exceeding 25°C. Fildes and McIntosh⁴ Injection apparatus is used. Five seconds after injection the patient tastes paraldehyde in forty seconds.

*Johnson Allen S.—For record and address of author see this journal.

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find permanent help in ergotamine tartrate. Those mildly affected, who obtain relief from one of the sedatives, will not care to change. But many persons in a middle group, who have attacks of moderate severity and who do not get relief from the usual remedies, may find ergotamine tartrate a godsend. The distracted physician to migraine patients has a new weapon in his armamentarium. These remarks refer only to the medicine as a palliative, giving symptomatic relief for individual attacks. The prevention of attacks, the "cure" of migraine is a different matter. The successful use of a drug should never displace efforts to correct underlying physical or emotional abnormalities.

DISCUSSION

What is the mechanism by which, on occasion, ergotamine tartrate so decisively puts the pain of migraine to flight? Among other actions, the drug stimulates the contraction of smooth muscle and depresses the activity of the sympathetic nervous system. In the latter respect, it is the antagonist of adrenalin. The authors who have been quoted accept the theory of vascular spasm as the cause of migraine and assume that ergotamine paralyzes the motor sympathetics and thereby relieves the spasm and the pain. On the other hand, one might assume that small doses of ergotamine act on sensory nerves with elimination of painful stimuli but without necessarily altering the calibre of vessels and the cerebral blood flow. In this connection, the relief of pruritus by ergotamine tartrate is suggestive. The time interval between injection and relief is the same for both pruritus and headache. As yet unexplained is the fact that after subcutaneous injection, blood pressure changes and uterine contractions begin almost at once but relief of headache does not begin for nearly an hour.

In the case of one of our patients, we have therapeutic evidence against the exclusive importance of the sympathetic nervous system. She is the patient already mentioned, who had complete bilateral sympathectomy by an excellent neurosurgeon in Baltimore. The operation did not influence headaches, but ergotamine aborted each attack. With the sympathetic pathways obliterated, how did the ergotamine act?

Does ergotamine help only patients with migraine? This question of specificity is important for etiological studies. Trautmann⁶ and Kottmann⁷ state that ergotamine does not influence non-migrainous headaches. Indeed, the latter contends that if ergotamine is not effective the patient is vagotonic. In our experience, however, ergotamine may terminate headaches which cannot be classed as migraine.

Certainly the theory of the mechanism by which the drug works requires experimental testing. We are interested in ergotamine tartrate principally because of our hope that study will

could be adequately controlled with morphine

Intravenous paraldehyde in 7 to 10 cc doses has also been used to control the restlessness and headache of a hypertensive patient with evidence of extensive cerebro-vascular pathology. This patient⁶ was violently nauseated by morphine and was unable to retain the barbituric acid derivatives by mouth or rectum. Quiet sleep was induced on each of six successive nights by the intravenous administration of 7 cc of paraldehyde. The sleep so induced would last several hours but could be greatly prolonged by the rectal injection of sodium amytal Gr V-X which was retained if given after consciousness had been lost. It is interesting to note that this patient began to show some degree of tolerance to paraldehyde after two or three injections, as there developed a latent period of ten to fifteen minutes between the injection and the onset of deep sleep. Such cases are probably not proper subjects for this treatment as then pain is hardly severe enough to warrant anesthesia and the relief from minor symptoms is too transient to be of much help in the long run. In this particular case intravenous paraldehyde was used because we had apparently exhausted every other method of giving the patient quiet sleep. When this type of patient reaches the convulsive stage, however, parenteral paraldehyde is the treatment of choice as its action is swift and an anesthetic dose is

well within the limits of safety. Here it is often superior to morphine, for many of these patients have developed a degree of tolerance which makes difficult the estimation of a dose which will be immediately effective yet safe.

Tolerance to paraldehyde unquestionably develops and habit formation has been reported, but these should not be problems if the drug is used only occasionally to control severe pain or convulsive states requiring rapid anesthesia.

It must be admitted that paraldehyde, however administered, is unpleasant and for that reason it is not the first choice for the relief of pain. But it is cheap, stable, easy to procure, requires no sterilizing and has a wide margin of safety while being almost instantaneous in action when administered parenterally. This makes it an exceedingly useful drug for the control of convulsive states and for the relief of pain which is unaffected by morphine.

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FOREIGN PROTEIN SENSITIZATION WITH MENINGEAL INVOLVEMENT DUE TO THE USE OF VACCINE*

BY WILLIAM E. HALL, M.D.,† AND THOMAS P. MURDOCK, M.D.‡

FOREIGN protein sensitization with involvement of the meninges has not been dealt with extensively in American literature. The clinical picture is alarming. We feel that the disease occurs more frequently than has been believed and because of this the importance of the condition should be stressed.

Swift and Boots¹ go so far as to say that most patients receiving considerable amounts of therapeutic serum develop serum disease. If this is so and certainly there seems to be sufficient evidence to support it the condition warrants more than passing notice. The present tendency toward subcutaneous intramuscular, and intravenous injections of foreign proteins will in all probability increase the frequency of protein sensitivity, and also the more serious meningeal complications. Serum disease seems much more likely to follow the use of scarlet fever antistreptococcus serum than any of the other serums.

In 1926 Kennedy² reported severe symptoms referable to the central nervous system in three patients with angioneurotic edema which he attributed to a focal edema of the brain. In 1928³ he also reported several cases of involvement of the nervous system, and one case showing meningeal signs and symptoms following administration of serum. He suggested two possibilities as causative factors. The toxicity of the serum, or the urticarial edema of the perineural tissue.

Sheppe⁴ reported a case of meningitis in a laboratory technician who had been infected with meningococci while at work in the laboratory. The patient was given antimeningococcus serum intraspinally and intravenously. Subsequently the patient got well, and the spinal fluid sterile. This was followed by meningeal symptoms with sterile spinal fluid and a cell count of 4536. He concluded that the final symptoms and signs were due to aseptic meningitis caused by the serum.

There is still another possibility of developing so-called aseptic meningitis and that is as the result of lumbar puncture. Hurxthal⁵ recently

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the corneal reflex is absent and anesthesia complete. By this time 5 to 10 cc of paraldehyde will have been given and some minor operations may be performed, but as the drug is rapidly excreted by the lungs usually the whole 15 cc will be required. The method is practically safe and it has been used in cases of grave cardiac and pulmonary disease with perfect success."

Atker⁴ the next year described a similar technique for the administration of paraldehyde in tetanus. In this case 15 cc each of paraldehyde and ether in 150 cc normal saline were given daily for eight days. The patient recovered.

Bastedo¹ mentions the intravenous use of 2 per cent paraldehyde in normal saline as a general anesthetic for short operations. He remarks that "anesthesia ceases when the infusion is stopped but sleep lasts for several hours" and none of the other half dozen standard texts in pharmacology which were consulted could reference be found to the parenteral administration of paraldehyde. Examination of the *Index Medicus* and the *Quarterly Cumulative Index* for the past ten years failed to reveal any references to the parenteral use of paraldehyde for the control of pain and convulsive states. Though no claim of originality is made it seems worth while to report the following observations because of the usefulness of this drug in properly selected cases especially where morphine has proved ineffective.

My first experience with intramuscular paraldehyde was in the case of a patient who had become maniacal after a hemorrhaphy. Morphine in the usual hypnotic doses was ineffective and physical restraint was deemed unwise because of the operative wound. Eight cc of paraldehyde were injected deep into the buttock as rapidly as possible. The patient lost consciousness before the syringe had been emptied and a peaceful sleep of some six hours followed. Equally good results were obtained in two other cases who had become unmanageable. A case of acute alcoholism who had become maniacal was subdued by this method so that gastric lavage could be carried out.

Encouraged by these results the drug was next tried in the terminal convulsive stages of cerebral hypertension which could no longer be controlled with morphine. Complete relaxation was obtained at once and the patient fell into a quiet sleep for several hours. This procedure had to be repeated a few days later but each time the convulsions were satisfactorily controlled. By this method it has been possible to control the convulsions of several other cases of advanced vascular disease. Intramuscular paraldehyde has not to my knowledge been used in eclamptic convulsions but it would seem worth trying as its action is rapid and safe.

Because of its rapidity of action it was given to relieve the pain of a coronary thrombosis

in which large doses of morphine had failed to control. This patient lost consciousness before the needle was withdrawn from the buttock and a quiet sleep lasted for several hours. The cardiac pain on awakening was negligible in this case. This procedure has been used in five other instances of coronary thrombosis where morphine had failed to bring relief. Equally good results were obtained though the loss of consciousness did not result so quickly in all these cases as in the first one. However, the patients admitted relief of pain within two minutes of administration and were asleep within five minutes. So striking is the result with 8 to 10 cc of paraldehyde that one almost hesitates to subject the patient to the extra twenty minutes of suffering while waiting to see if the morphine will be adequate.

There is one serious drawback to intramuscular paraldehyde in addition to the unpleasant odor imparted to the breath. It is highly irritating and its injection is accompanied by severe burning pain. If enough is given to produce immediate unconsciousness, however, very little suffering is caused though some soreness persists. When paraldehyde is injected intramuscularly the undiluted USP drug is used. Eight cc may be considered an average dose for an adult weighing about 140 lbs. I have frequently given 10 and occasionally 12 cc to very large or obstreperous patients. The objection to these larger doses lies not in their toxicity but in the discomfort and difficulty encountered in injecting such a large amount of fluid into the muscles especially when that fluid is as irritating as paraldehyde. Even with these larger doses however I have found no evidence of necrosis. In fact the soreness at the site of injection is surprisingly transient considering the comments occasioned by the injection.¹ The patients who received this for the relief of pain all volunteered the statement that the respite from suffering more than compensated for the transient pain of injection. This procedure has been employed on more than twenty occasions without any evidence of necrosis. The injection, however, should be given deeply into the gluteus medius to avoid sloughing.

In the hope of avoiding the pain of intramuscular injection the intravenous route has been employed in a few cases. A patient⁵ suffering terrific pain from a coronary thrombosis was given 5 cc of undiluted paraldehyde into the vein at the rate of about 1 cc in three seconds. The patient lost consciousness in about ten seconds. Coincident with the onset of anesthesia was a slight amount of pharyngeal irritation accompanied by coughing and a strong smell of paraldehyde on the breath. After a few coughs the patient appeared completely relaxed and slept quietly for about an hour. Upon awakening the pain was much less severe and

could be adequately controlled with morphine.

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Swift and Boots¹ go so far as to say that most patients receiving considerable amounts of therapeutic serum, develop serum disease. If this is so and certainly there seems to be sufficient evidence to support it, the condition warrants more than passing notice. The present tendency toward subcutaneous intramuscular, and intravenous injections of foreign proteins will in all probability increase the frequency of protein sensitivity, and also the more serious meningeal complications. Serum disease seems much more likely to follow the use of scarlet fever antistreptococcus serum, than any of the other serums.

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called this to the attention of the profession. He mentioned the increased frequency of lumbar puncture as a diagnostic procedure, and also the increased frequency of its use in spinal anesthesia. He believes that because of these, the possibilities of developing this disease are definitely increased.

Goldman⁶ was stimulated to investigate aseptic meningitis because of the frequency with which the condition was found at autopsy. He showed that the condition occurred with great regularity in experimental animals that had received intraspinal injections of serum. Of course the question may here arise as to whether the condition is due in these cases to trauma to the meninges, or to the administration of serum.

Wilson and Hadden⁷ have recently written on the question of neuritis and multiple neuritis following serum therapy. They reviewed the literature extensively and reported several cases.

The accepted procedure in patients with suspected meningococcic meningitis has been to administer serum intraspinally and intravenously following the withdrawal of spinal fluid. In the light of the present case, we feel that this should be done only very cautiously, and only after a definite diagnosis has been made. In other words, we feel that serum should be administered intraspinally and intravenously, only in those cases in which the diagnosis is clear. In doubtful cases, the fluid should first be examined and if found positive, the serum is injected.

A thorough search of the available literature does not reveal a case of foreign protein sensitization with meningeal involvement, due to the use of a vaccine. That it does occur seems a certainty. The probability is that the sensitization is due to the foreign protein in the bodies of the bacteria. We feel that the use of vaccines in medicine has been increased to such an extent that the danger should be called to the attention of the profession. It is quite probable that many physicians, for one cause or another, frequently inject vaccines.

The accepted uses of vaccines for atrophic arthritis and pertussis, the uses of autogenous vaccines for various conditions, and the unscientific use of various kinds of stock vaccines for almost every infectious condition, mean that almost certainly there will be an increasing number of cases of foreign protein sensitization, and with these a certain number of cases with meningeal involvement.

All of the cases (except that reported below) that we have found in the literature and have reviewed, were associated with the use of serum, and most of the cases with the use of serum intraspinally whereas the case reported here was not associated with either.

We believe that the danger of developing serum disease is increased in children who have had diphtheria toxin-antitoxin, and because of

this, the danger of serum therapy is markedly increased. The use of toxoid in the future will, in all probability, lessen the number of cases of serum disease.

The condition is difficult to diagnose, particularly if the skin manifestations are not prominent. The difficulties are increased if, as is frequently the case, the patient is not clear mentally, and it is impossible to obtain a clear history. Given semi-consciousness, headache, opisthotonos, fever, vomiting, positive Kernig, and discrete spots on the skin, one most naturally assumes that the condition is meningitis, and the probable clinical diagnosis is epidemic cerebrospinal meningitis. The spinal fluid is under increased pressure and is turbid. (The injection of serum at that point adds insult to injury.) We feel that if there is any doubt as to the diagnosis, treatment should be postponed until the spinal fluid has been examined.

We think there are two points worthy of mention as to differential diagnosis. First, the patients do not look so ill as the findings or signs would indicate, secondly, the low leucocyte count is not in conformity with the clinical picture of epidemic meningitis. It is now generally accepted that at the onset of symptoms due to foreign protein sensitization, there is leukopenia. Later on it is common to find a leukocytosis. We have the feeling that many cases of meningeal involvement due to foreign protein sensitization have gone unrecognized because of the acceptance of the syndrome as generally outlined, that is, prostration, fever, adenopathy, urticaria, painful joints, and vomiting following the administration of a foreign protein by injection. Meningeal involvement not being sought for or expected, is overlooked.

CASE REPORT

- H K a white female patient aged 43 years was admitted to the Hospital on April 3, 1933.
- C C Headache and vomiting.
- P H The past history disclosed the usual children's diseases without complications. Late in 1931 she had an attack of furunculosis lasting several weeks. In 1932 she was ill with "rheumatism" for several weeks. She had recurrence of this for a few weeks prior to admission to the hospital. There was no past history of hay fever or previous urticaria.
- F H Mother living and well. Father dead cause unknown. One sister living and well. One brother has sinus trouble.
- P I The onset of the present illness occurred suddenly on the day before admission with headache, vomiting and backache. These symptoms persisted all day when one of us (W. E. H.) was called to see her. A clear history was impossible because the patient was semiconscious. The temperature was 102° pulse 100 respirations 30.
- P E Pupils equal and react to light and accommodation. Conjunctivae and sclerae injected. Moderate edema of both eyelids. No extraocular palsies. Tongue moist. Teeth in good con-

dition. Pharynx clear Neck stiff No tenderness over sinuses No facial palsies Thyroid not enlarged Cervical glands not enlarged Lungs negative Heart not enlarged, sounds of fair quality, systolic murmur over the mitral area. Pulmonic second sound was booming and greater than the aortic second sound Bl Pr 145/85 Liver and spleen could not be felt There were no tender points and no masses There was an old scar in the right lower quadrant. Pelvic and rectal examinations were negative There were prominent veins in the left leg The right knee jerk was hyperactive Babinski negative On her back chest, abdomen and over the backs of her hands and wrists were sharply defined red spots varying in size from one centimeter to three centimeters in diameter These were surrounded by a narrow ridge of grey and faded on pressure

A diagnosis of meningitis was made and she was admitted to the Meriden Hospital A lumbar puncture was done The fluid was slightly cloudy and under increased pressure She was given antimeningococcal serum intraspinally Examination of the spinal fluid showed the total cell count to be 6804 polymorphonuclears 89 per cent, small lymphocytes 6 per cent, large lymphocytes 5 per cent. No organisms were found on smear or culture Globulin 4 plus No reduction of sugar Colloidal gold curve 1244445533 (meningitic curve) Wassermann negative

Following this the patient improved rapidly On the fourth she still complained of some headache but this was not so severe The temperature on the evening of April 4 1933 was 99.8° rectally pulse 100 respirations 20 From then on until discharge the vital signs were in normal range

On April 4 1933 it was possible to obtain a clear history from the patient. She stated that she had been taking some injections for 'rheumatism' The doctor informed us that she had been given several injections of antistreptococcal vaccine for her arthritis the last injection was 1 cc and had been given on the day preceding the onset of her present illness We also learned that she had an attack of urticaria following vaccine injection one month ago

On April 4 1933 lumbar puncture was repeated. The total cell count was 4740 polymorphonuclears 88 per cent. No organisms were found on smear or culture

The urticaria had practically disappeared on April 5 1933 two days following admission

On April 5 1933 lumbar puncture was repeated. The cell count was 1620, and polymorphonuclears 86 per cent.

The laboratory findings were RBC 4040000 WBC 6000 Hemoglobin (Tallqvists) 80 per cent, polymorphonuclears 71 per cent small lymphocytes 19 per cent large lymphocytes 10 per cent filamented 84 per cent, nonfilamented 16 per cent. Blood Wassermann negative Non protein nitrogen 40 mgs Blood sugar 136 mgs Blood culture negative

The patient continued to improve and was discharged on April 10 1933 one week after admission Two days later on April 12 1933 the patient complained of feeling weak, of smarting of the eyes and of vague pains On the next day April

13 1933, she was readmitted to the hospital On admission the temperature was 99°, pulse 100, and respirations 20

There were a few urticarial spots on her back and chest and slight edema of her eyelids, otherwise the findings were essentially the same as on the previous admission A spinal tap was done, and the total cell count was 564 with 77 per cent polymorphonuclears The fluid was under increased pressure and was slightly turbid On April 15, 1933 the rash involved her arms forearms, legs, chest and back and itched furiously A dermatological consultation was requested, and Dr R V Quinnlan saw her and concurred in the diagnosis His tamine phosphate was used at this time for the urticaria This was followed by local relief. On April 17 1933 the rash was still present, but not so marked and she developed some painful, red and swollen joints involving her wrists and great toes This gradually subsided and from then on her convalescence was uneventful A lumbar puncture was done on April 21 1933 and showed a cell count of 166, with polymorphonuclears 56 per cent, and lymphocytes 44 per cent Smear and culture were negative The patient was discharged on April 25, 1933

It is our feeling that the recurrence in this patient was due to the administration of anti-meningococcal serum before the serological work had been completed and the diagnosis established

That the original attack was caused by streptococcal vaccine seems certain This opinion is supported by the fact that a history was obtained of a previous attack of urticaria one month before the present attack, and that it followed an injection of streptococcal vaccine

Of particular interest is the extremely high cell count, ranging from 6804 to 4740, to 1620, to 564, and finally to 166

CONCLUSIONS

- 1 The literature on meningeal involvement due to foreign protein sensitization has been reviewed
- 2 The disease can be caused by vaccines
- 3 This warning is issued because of the increased frequency of the use of serums and vaccines

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RECURRENT DISLOCATION OF THE SHOULDER

BY FREDERIC JAY COTTON, M D,† AND GORDON MACKAY MORRISON, M D ‡

RECURRENT anterior (subcoracoid) dislocation of the shoulder is a not unusual sequel of reduced traumatic dislocation. It occurs in young strong active men, usually, and urgently calls for relief. A large number of operations for cure have been devised, not a few of which have excellent records as to end results—so far as checking relaxation is concerned*.

This note is a plea for a really *restorative, reconstructive* operation that sacrifices no structure, no function, and really reproduces original function and power. It seems to be at least as effective as any other, when performed as outlined.

The essential or at least constant lesions found† are the general slack of the whole capsule, particularly in front toward the axilla, and, associated with this, a retraction of the subscapularis muscle.

It is futile to talk of anything that has to do with the *tendon* of the subscapularis.

There is no such thing. That is to say, no isolated tendon structures, differentiated from the capsule into which the muscle is inserted.

The *muscle* is inserted on the front face of the thick fibrous capsule, normally within an inch of the glenoid edge, in these cases of recurrent luxation it may be found retracted not less than two and one-half inches toward the midline, to be found only by deep retraction, sometimes only after strong dragging outward with heavy double hooks on the V-shaped portion of the fibrous capsule, cut and loosened for advancement. (See figure, A, 8.)

Oddly enough, the muscle once found is normal looking, not evidently atrophic.

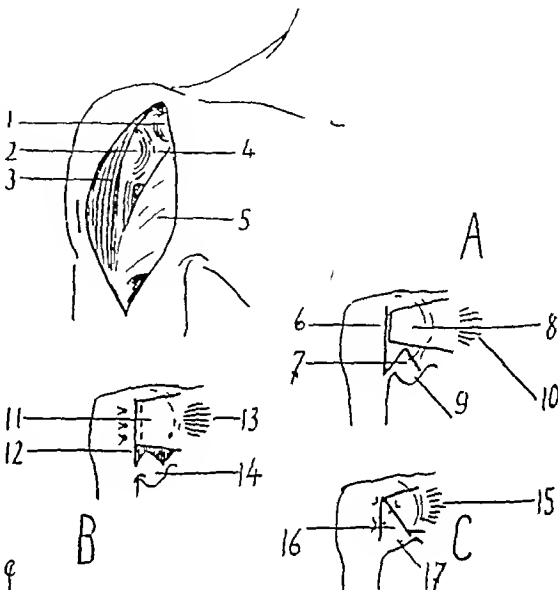
The essence of the operation here described is an advancement of the muscle to its normal relation to the joint, combined with a reefing of the loose capsule in front and below.

The operation began as an anterior capsulorrhaphy devised and shown by the late Dr Herbert Leshe Burrell.

Thus alone proved not reliably efficient, and there have been added a reefing upward and forward of the loose capsule in the axilla,—and, more particularly, a really anatomical dissection of that part of the capsule into which the subscapularis muscle should be inserted, and an advancement of this muscle, often through one and one-half inches to its proper anatomical

place. So modified, the operation works. The approach is by the familiar Hueter incision, from an inch above the coracoid process down along the inner edge of the deltoid to an inch below the insertion of the great pectoral.

The deep approach is between the deltoid and



RECURRENT DISLOCATION OF SHOULDER.

UPPER LEFT

- 1 Coracoid process
- 2 Head of humerus
- 3 Deltoid muscle (and cephalic vein)
- 4 Edge of glenoid cavity
- 5 Pectoralis major muscle

FIG A.

- 6 Vertical cut in capsule internal to bicipital groove
- 7 Triangular flap of capsule (to take up slack capsule in the axilla)
- 8 Flap to include the subscapularis insertion
- 9 Lax capsule in axilla
- 10 Subscapularis muscle

FIG B

- 11 Shortened flap carried outward taking with it the subscapular muscle
- 12 Redundant capsule trimmed out
- 13 Subscapular muscle
- 14 Lax capsule in axilla

FIG C

- 15 Advanced subscapularis muscle
- 16 Triangle (9 of fig A) brought upward and sutured in place
- 17 Axillary portion of the capsule pulled up and made flat

the clavicular portion of the pectoral. In this interval lies the cephalic vein, which may be retracted inward with the pectoral. It is often convenient to cut the upper half of the tendon of the pectoralis major. This gives much more room, and does no harm. After the great muscles are once separated, one comes directly onto the capsule. Rotate the arm outward and the head presents. Further procedure may best be understood from the drawings. The flap that is to include the subscapularis muscle goes through

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†We have almost never—only once to be exact—found even a trace of glenoid defect though no doubt it does occur.

‡Cotton and Morrison—For records and addresses of authors see page 817 Issue of April 12 1934

the fibrous capsule to the synovial capsule, which is at this place, a separate layer

The whole operation can be done without opening the joint. Any opening that may be made into joint or bursa is of no consequence whatever. We have never taken out any part of the undoubtedly redundant synovial layer, nor have I seen reason to do so. Suturing of the shortened V-shaped flap carrying the muscle, to the cut edge of capsule near the biceps groove must be very solid, it must withstand some strain. Chromic gut No 2 is good. There is no room to use fascia. The V brought up from underneath out of the axilla is trimmed and used as a covering flap. It is under no tension—suturing with No 1 chromic gut is ample.

The mechanical part of the operation done, the wound closes itself. To control undue dilatation of the stripped cephalic vein one may bury it between the great muscles and lightly suture them about it. The cut pectoral insertion needs no sutures. The arm is put up with elbow at side, and the forearm across at the waist. Pressure dressing is not feasible. A light soft sand-bag over the front of the shoulder for from 12 to 24 hours is advantageous, and usually well tolerated.

Motion begins at three weeks, and useful motion with solid healing follows within ten weeks at most. There is always, if the operation is properly and solidly done, some limitation of abduction and outward rotation for from four to six months*.

CASE 1 R W M male aged 27 In Public Health Service. Seen March 21 1920. Dislocated left shoulder at bayonet practice in September 1917 and a week or so later from a slight backward fall. Discharged from the army December 1917. While at home the shoulder was out four or five times. Redrafted September, 1918. Discharged again in May 1919 for same disability. Shoulder (left) has been dislocated seventeen times in all despite an operation at the Boston City Hospital in 1918 and two operations in the army. Six weeks ago the right shoulder went out while the doctor was reducing the left shoulder. The right has been out three times in all. General musculature poor about both shoulders and *scapulae* very poor. A neurologist fails to confirm the suspicion of progressive muscular atrophy. The left shoulder is a mess of scars front and back. Admitted to the Parker Hill Hospital April 12 1920. Operated on the left shoulder April 16 1920 (F J C). Usual anterior incision. Typical Burrell-Cotton operation with capsule reefing and advancement of subscapular muscle. All musculature is poor.

Operated elsewhere on the right side twice in 1921 with recurrence.

Examination March 24 1922. Left shoulder shows muscle redeveloped practically normal. Right shoulder has limited motion and two scars. Subluxation rather than total dislocation. Operated at City Hospital 1922 (F J C) for right shoulder.

Advantageous to clear this last hindrance is the free pendulum exercise by the patient who lies on a bed face down, with the arm hanging over the edge and a bit later the swinging of light Indian clubs.

Excision of scar, type Burrell-Cotton operation right shoulder. Seen July, 1933. Not very good musculature about shoulders even now, and some limitation of motion on right. There has been relaxation of either shoulder after the muscle capsule reefing.

CASE 2 V R female, aged 24. Seen September 1929. Hospital technician. She was thrown from a 'cutter' eight years ago, and dislocated her shoulder. Luxation since then five times needing reduction five other times partially dislocated. Joint has an unsafe feeling and is sometimes painful. Operation recommended. Finally came to operation June 29, 1930 at the Boston City Hospital (F J C). Type Burrell-Cotton operation. Normal recovery. Examined June 1933. Shoulder in normal shape in all ways. Has had no recurrence.

CASE 3 E F C, male aged 23. Wireman in electric corporation. Seen October 19, 1932, referred by the late Dr John F Sweet of Newport, Rhode Island.

On October 17 1931 he reported that he injured his left shoulder cranking a truck about five years ago (dates are vague) and it has 'gone out' twelve times a year since then. The last time, a few days ago Dr Sweet had to put it back, and send him to Boston.

He proved to be a young Frenchman of admirable build and amazing muscle. The shoulder showed nothing but was a little sore.

Operation at the Faulkner Hospital October 1932 (Cotton and Morrison). Usual incision; approach. Marked looseness of capsule, in fact only Subscapularis much retracted. Usual excision and reefing done—taking up muscle and capsule slack of near two inches. Six double No 2 chromic gut sutures to hold it, in view of enormous muscles. Sutures through muscles control dilatation of huge cephalic vein. No reefing of axillary part of capsule.

Motion begun early and from December 15th he was allowed full and free use of it.

He was last seen August 25, 1933. He has been using the arm continuously but only within a few nights has he had absolutely full upward motion. Now 100 per cent motion and use. The deltoid muscle is nearly as huge as on the right. No sign of recurrence. In a young giant like this it pays to quilt the capsule liberally and solidly, but there for a time for this very reason some resulting limitation of motion.

CASE 4 H G male. Original injury two years before. Out several times most recently while swimming. He demands relief. Admitted September 11 1928. Discharged September 22 1928. Reoperation September 13 1928 at the Boston City Hospital.

Usual aseptic precautions. Anterolateral incision over left shoulder. Cephalic vein located. The deltoid was separated from the pectoralis major and retracted with the cephalic vein. The shoulder capsule was exposed, a reef taken in the capsule and the subscapular tendon shortened over the capsule. No recurrence to date. Examination July 1933.

CASE 5 G McL aged 22 florist, seen May 1933 referred by Dr Robert J Graves of Concord, N H. No history of original trauma but for several years about once a year the right shoulder has been throwing out. Ten days ago Graves had to reduce it. Examination showed a vigorous young man with only local difficulty. Operation June 2 1933 at the Faulkner Hospital. Typical incision and technique. The subscapularis was advanced about an inch and a half and secured.

with No 2 chromic gut. The lower capsule in the axilla was not lax, but caught up in a V, very snugly, according to the usual technic

Motion from June 26, 1933 On July 6, 1933, set about vigorous limbering up exercises A prognosis of six months before regaining absolutely normal abduction and outward rotation was given Discharged July 6, 1933 No recurrence as yet

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BY AUSTIN W CHEEVER, M D *

THERE have been a few years that were epochal in the history of the treatment of syphilis 1905, with the discovery of the spirochete, 1906 with the development of the Wassermann reaction as a practical test for syphilis, 1910, with the success of Ehrlich's six hundred and sixth experiment, and a few others With these exceptions, the progress in any one year has not seemed consequential, but our small advances have been cumulative and over a period of years they show a long step forward as C Morton Smith¹ makes clear in his review of the changes in the treatment of syphilis during the last twenty years He traces our gain in the relief and control of this disease and in our efforts to educate the public in its attitude toward the syphilitic One proof of our success in the latter respect is evidenced by the fact that the past year in Boston saw what an officer of the Massachusetts Society for Social Hygiene² hailed as "the most recent single event of importance in the field of social hygiene" It was the production of the picture "Damaged Lives" which played to crowded houses Equally gratifying was the fact that Boston dramatic critics dared to refer to the keynote of the play, gonorrhea and syphilis, by name without resorting to euphemisms In this same city Nelson of the State Department of Public Health³ has been giving radio broadcasts on syphilis and gonorrhea with, it is said, not a single complaint against their frankness but a number of favorable comments and requests for further information At least one newspaper printed an editorial commending the talks

However, there still remains much educational work to be done when a court⁴ will annul a marriage because a woman having had ad-

vanced syphilis before marriage did not disclose the information to her husband With the same lack of understanding the appellate court, Louisiana,⁵ has ruled that an insurance policy which excludes from its coverage venereal diseases imposes no obligation on the insurer to compensate for the effects of syphilis, even though innocently acquired

If we are to prevent blindness from interstitial keratitis and the mental and physical defects of congenital syphilis, the medical public must be educated to greater vigilance in the care of the pregnant mother Lees⁶ reports that in Edinburgh among 1000 untreated pregnancies only 24.5 per cent of the children were sufficiently healthy to survive while a similar survey of efficiently treated mothers showed 89.2 per cent of healthy children, and an even larger percentage, if the treatment of the mother was begun before the sixth month of pregnancy At the Memphis General Hospital⁷ 1000 cases of syphilis in pregnant women were discovered over a period of ten years Of those receiving treatment 65 per cent had normal, full-term babies with no evidence of syphilis Of those receiving no treatment none had a normal, full-term infant with no serological or clinical evidence In view of these reports it is encouraging to know that the American Medical Association at its annual meeting in 1933 adopted a resolution⁸ requesting the House of Delegates to appoint a committee to arrange methods by which cooperation might be secured with the American Medical Association, the National Society for Prevention of Blindness, the American Social Hygiene Association, the obstetric and ophthalmologic societies, the American Dermatological Association, and public health organizations and such others as can help, to see that blood examinations are made of all pregnant women so that all cases of syphilis may be treated

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The use of artificially produced heat in the treatment of central nervous system syphilis and the favorable results from malaria have stimulated many investigators to try to devise less dangerous and more controllable methods of producing fever. M. O. Nelson⁹ recommends combined typhoid vaccine which he found brought improvement in patients with resistant neurosyphilis. Epstein and Paul¹⁰ for two years have been using a diathermy apparatus capable of raising the body temperature to 41.1° (106° F). They describe their technique and results on a group of twenty-eight patients with various forms of central nervous system syphilis. Clinical improvement was noted in patients with all types of the disease but especially so in those with tabes dorsalis. One fatality occurred in a patient of advanced age with marked mental deterioration. Graham¹¹ obtained results better than those from malaria, he thinks, in twenty-four cases treated by diathermy though he records one death due to respiratory failure attributable to treatment. Worthing¹² describes a diathermy machine in which so far only a small number of patients have been treated. His results agree in general with those of other workers, but the author emphasizes the extreme discomfort of the patient after the temperature rises above 102 degrees.

Freeman, Fong, and Rosenberg¹³, on the other hand, found the substitution of diathermy for malaria in the treatment of dementia paralytica far from promising. They feel that early reports on the use of mechanical measures for producing fever have been premature. O'Leary¹⁴ too feels that the results from malaria are still superior to those obtained from electrical machines. He has observed over a period of eight years almost one thousand patients with neurosyphilis who were treated with malaria and he has found that in more than three-fourths of the cases of asymptomatic dementia paralytica, clinical progress of the disease was arrested, and the serologic tests of the spinal fluid became reversed to complete negativity in almost half the cases of asymptomatic neurosyphilis in which routine measures of treatment had previously failed to influence the serology. The results in the treatment of tabes dorsalis and of the tabetic form of dementia paralytica were likewise encouraging.

In 1932 Gennerich¹⁵ reported on a new mercury preparation which he found intensely effective for all stages of syphilis but less active than arsphenamine. This year Lawless¹⁶ reports on this drug colloidal mercuric sulphide. He found it painless with no palpable infiltration and decidedly effective though too slow to be of use in the infectious stages of syphilis. It is highly recommended as a supportive drug with the arsphenamines and bismuth. A serious drawback is its rather constant resistant staining of the skin at the site of injection.

Because of inconclusive clinical results with 50 per cent mild mercurous chloride injections, Cole et al.¹⁷ made a study of the mercury excretions in order to obtain a better criterion of its true absorption from the skin. They found it very poorly absorbed.

After a study of the different types of bismuth preparations watery solutions, a solution in ethylene glycol, oily solutions and oil suspensions, Sollmann, Cole, and Henderson¹⁸ decided that the total dosage is much more important than the particular preparation used. They were impressed by the similarity in the absorption and excretion rate of all these compounds except the oil suspension of bismuth salicylate which showed much slower absorption and excretion. Distinct doubt is thrown upon the desirability of too rapid absorption in bismuth because of a correspondingly rapid excretion rate and the accompanying tendency to overburden the kidneys and liver. After studying five typical bismuth preparations as to rate of absorption distribution in kidneys and liver, urinary excretion, irritation at site of injection, and toxicity Thompson et al.¹⁹ show that it is not yet established that a rapid absorption rate will result in a more effective concentration against syphilis. They confirmed the intimate relationship between absorption rate and toxicity, the preparations showing fastest absorption being most toxic.

An excellent summary of our knowledge of bismuth at the present time is found in a discussion of bismuth compounds by Irgang, Alexander and Sala²⁰.

Bismuth has been recommended as a prophylactic against syphilis and in this connection it is interesting to see the report by Zetterholm²¹ of a reinfection in a patient during the course of continuous bismuth treatment. The same situation holds for stovarsol by mouth which has been recommended as a prophylactic. Tzanck et al.²² report an instance of a patient's developing syphilis while taking stovarsol by mouth for non-syphilitic lesions.

After studying the effects of arsphenamine and tryparsamide in systemic syphilis and neurosyphilis in sodoku and in malaria Solomon, Epstein and Berk²³ conclude that the value of the former drug is in its spirocheticidal and plasmodicidal effect as indicated by its action in stopping fever in malaria and in clearing the blood of plasmodia in inoculation malaria, while tryparsamide showed no effect on either fever or blood. However, this latter drug shows a power to stimulate tissue to rapid repair, a local action within the local areas of the nervous system.

Raziss and Severac²⁴ made a very careful comparison of bismarsen and arsphenamine in rabbit syphilis. They conclude that bismarsen is as effective as arsphenamine in experimental syphilis in rabbits.

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A comparative study of the results and reactions of neoarsphenamine and arsphenamine was made by Thornley²⁵. Taking a group of 999 patients who had been under observation or treatment for six months or longer, he found the difference in efficacy between the two drugs not very great when the neoarsphenamine is given well diluted, but when for greater convenience it is given in concentration, the reactions are much more numerous than with arsphenamine. To lessen the chances of treating syphilis with a brand of neoarsphenamine below the average in curative activity, since the different brands vary in anti-syphilitic properties, Schamberg and Kolmer²⁶ urge that the National Institute of Health establish official standards of therapeutic efficiency for this drug in addition to their present tests for toxicity.

A method of treatment worthy of further study is the work being done by Wittenberg²⁷ on a plan to introduce larger amounts of the arsphenamines into the central nervous system. His idea is to use drugs of the epinephrine group to cause cerebral vasodilation, followed in two minutes, the time of the height of the dilation, by neoarsphenamine.

A distinct inhibitory effect on syphilis in rabbits through the use of trypan blue has been found by Morgan et al²⁸. They suggest that it is produced not by spirocheticidal action but by the increase of the number and activity of the phagocytic mononuclear cells.

Robinson²⁹ discusses a case of "fixed" dermatitis in a patient having tryparsamide showing a striking resemblance to that caused by phenolphthalein. The eruption could be brought out at will by giving injections of tryparsamide.

Serefis³⁰ believes that salvarsan intolerance can be prevented or cured by decreasing the sodium chloride content of the food and increasing its content of potassium, calcium, and magnesium.

Belding and Arrowood³¹ made a quantitative study of three flocculation tests, Sigma, Kahn, and Hinton, from the standpoint of sensitivity and variability. They found the Hinton test the most sensitive in detecting syphilitic reagin, the Kahn next, and the Sigma the least. The Hinton showed less variability, they report, than the other two. These investigators³² in making preliminary experiments to determine the suitability of the Hinton test for laboratory routine found what they consider possibilities for adapting this test for quantitative work. They described the technical considerations involved in such a modification.

Dental observations are being made on syphilitic teeth by induced electric currents. So far only a preliminary report³³ has been made of abnormalities which seem to be connected with syphilis.

Wile³⁴ has made a very careful analysis of a

group of 157 cases of syphilis with cardiovascular involvement occurring preponderantly in males averaging from 46 to 53 years in age, the milder involvement being at the later age. The average duration of the disease before clinical detection varied from 15 years in the severe cases to 24 in the mild. A moderate number of the group had had some previous antisyphilitic treatment, but practically none had had what would now be called satisfactory.

The pathology, clinical features, and treatment of cardiovascular syphilis have been most ably presented by Mallory, White, and Smith³⁵ and should be read in their entirety by those interested in the problem.

After examining 1,548 patients with cancer of the mouth at the Collis P. Huntington Memorial Hospital, Lund³⁶ found that 122 had syphilis, also. Of 401 patients with cancer of the tongue, 70 had syphilis. Lund calls syphilis a contributing cause of cancer of the tongue. In the experience of Molesworth³⁷, who reported last year on this subject, 20 to 30 per cent of cancers in the mouth occurred in persons showing positive serology.

In the opinion of Wheeler³⁸ a persistently positive serum reaction means uncured syphilis. He arrived at this conclusion after a study of 200 patients with persistently positive serology.

Herrmann³⁹ feels that syphilitic disease of the peripheral arteries is not an uncommon occurrence. He describes three types: the angiospastic, occurring in upper extremities and manifesting itself as a chronic arteriospasm, the endarteritic, seen in the legs and feet with constant pain, the thromboarteritic, uncommon, manifesting itself by extensive organic occlusion of all the major pathways of the extremities without evidence of gross gangrene. Active antisyphilitic treatment should be the first step in the management of these disturbances. Treatment by means of an intermittent negative pressure environment is the most effective in the opinion of the author.

At an Illinois State Institution⁴⁰ where up to 1930 there was no routine antisyphilitic treatment, records of all patients up to that time were carefully examined, and of the 59 found to have positive reactions on admission, eighteen (30.5 per cent) of varying ages and length of stay now have negative tests although they have received no antisyphilitic treatment.

It is not yet sufficiently realized that intra-urethral chancres occur more frequently than is generally supposed. Strachstein⁴¹ reports six cases and calls attention to the fact that a persistent so-called simple urethritis may indicate a probable intraurethral chancre. Serra⁴² reviews the cases of extragenital primaries seen at the dermatosyphilitic clinic of Turin from 1889-1931. Nine and two tenths per cent of the total number of cases showed extragenital lesions. Cases of extragenital syphilitic infec-

tions in six female members of one family transmitted through the common use of eating utensils is reported by Jeno Follman⁴²

It is not possible to overemphasize the importance of care in choosing transfusion donors. A secondary rash developed in a girl fourteen years of age after she had received blood from her brother, whose chancre appeared four or five days later⁴⁴

For years it has been a controversial point as to whether there are other forms of the organisms of syphilis than the familiar *Spirocheta pallida*. Numerous facts can be satisfactorily explained on the ground of a life cycle such as is known in some other organisms. Levaditi and others⁴⁵ working at the Pasteur Institute in Paris are studying this problem. They feel that it is probable that the virus undergoes certain phases in its evolutionary cycle before it can invade the central nervous system and that it then passes through alternating phases in the nervous system, sometimes invisible sometimes in the form of spirochetes and that this explains the inconstancy of the findings in the cortex of general paralytics. Coutts⁴⁶ believes that certain cases of syphilitic infection with no apparent infective lesions can be explained by the possibility that latent syphilitics may become active carriers of *Spirocheta pallida*. He cites two cases where this seems the only satisfactory explanation as to the mode of contagion.

If we are to gain complete control of syphilis, sources of infection and exposures must be traced. Smith and Brumfield⁴⁷ by the careful questioning of 119 patients with rather recent syphilis discovered and placed under treatment 93 syphilitic contacts. From one original case 19 contacts were traced, having either primary or secondary syphilis or positive blood tests. Nelson of the Massachusetts State Department of Public Health⁴⁸ feels that much will be accomplished when the physician in his office practice uses the same careful follow-up that is used in the best clinics. He describes an experimental service which the State has offered a few physicians treating syphilis and gonorrhea where by a trained investigator or social worker is sent out by the State Department to work with the doctor on lapsed cases. Though the results were sufficient to demonstrate the value of such service, it has not yet been possible to "sell" this service to the majority of physicians.

A study of field work over a period of nine months in the clinics and activities of seven institutions has been made by Morris⁴⁹. The author summarizes her findings and makes general recommendations. Her report is of interest to institutional workers.

Two valuable books have added to the year's progress. The History and Epidemiology of Syphilis by William Allen Pusey⁵⁰ presents in an unusually attractive form the three Gehr-

mann lectures delivered by the author at the University of Illinois on the historical and epidemiological aspects of syphilis. Joseph Earle Moore⁵¹ in the Modern Treatment of Syphilis has given us a monograph of over five hundred pages generously supplied with references to the best literature on the subject. By the very free use of graphs and tables and by employing the simplest language possible, this book makes readily available information as to what can be done for patients with various types of syphilis and what results may be expected from the treatment.

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MORTALITY RATES

Telegraphic returns from 86 cities, with a total population of thirty seven millions for the week ending April 28, indicate a mortality rate of 120 as against a rate of 113 for the corresponding week last year. The highest rate (184) appears for Washington, D. C., and the lowest (68) for Evansville, Ind., and Long Beach, Calif. The highest infant mortality rate (164) appears for San Antonio, Texas, and the lowest for Albany, N. Y., Fort Wayne, Ind., Long Beach, Calif., New Haven, Conn., Omaha, Neb., Somerville, Mass., South Bend, Ind., Spokane, Wash., Syracuse, N. Y., Tampa, Fla., Utica, N. Y., Waterbury, Conn., and Youngstown, Ohio, which reported no infant mortality.

The annual rate for 86 cities is 126 for the seventeen weeks of 1934 as against a rate of 120 for the corresponding period of the previous year.

SUMMARY OF DEATHS AND DEATH RATES (ANNUAL BASIS)
FROM AUTOMOBILE ACCIDENTS PER 100,000 ESTIMATED
POPULATION FOR 86 CITIES FOR CORRESPONDING PERIODS
OF 1934 AND 1933

	Week ending		First 17 weeks	
	April 28, 1934	April 29, 1933	1934	1933
Total deaths	134	113	2,660	2,344
Death rate	187	157	218	192
Deaths due to accidents in city	104	90	2,170	1,892
Death rate	145	125	178	155

—Bureau of the Census

MR STRAWSON RESIGNS

After fifteen years with the National Tuberculosis Association, Arthur J. Strawson has resigned to accept the position of executive secretary of the Southern Worcester County Health Association, 5 Pleasant Street, Worcester, Massachusetts. He will assume his new office on June 4.

Upon graduating from Northwestern University in 1908, Mr. Strawson was with *The Survey* and in settlement work for three years and then spent four years with the Chicago Tuberculosis Institute and the Illinois Tuberculosis Association. He left Chicago to become executive secretary of the Indiana Tuberculosis Association resigning from this position for work with the American Red Cross during the World War. He served in camps for the Red Cross in Kentucky and Indiana and later was a field agent for National Headquarters. In 1919 he became regional secretary for the National Tuberculosis Association in the North Mississippi Valley with headquarters in Indianapolis. When the regional offices were discontinued in 1920, he came to New York as field secretary.

Mr. Strawson's countrywide experience has familiarized him with all phases of the program for tuberculosis control. The staff of the National Association feel profound regret at his resignation but congratulate Worcester County on securing his valuable services and rejoice that he is to continue in the tuberculosis field.—*Bulletin of the National Tuberculosis Association*

CASE RECORDS of the MASSACHUSETTS GENERAL HOSPITAL

ANTE MORTEM AND POST MORTEM RECORDS AS USED
IN WEEKLY CLINICAL PATHOLOGIC EXERCISES

EDITED BY RICHARD C CABOT, M.D.
F M PAINTER, A.B., ASSISTANT EDITOR

CASE 20201

PRESENTATION OF CASE

The patient, a fifty-eight year old Irish cook, was perfectly well until one week before entry, at which time she began to have loss of appetite. Five days before entry she had a rather severe upper abdominal pain which radiated through the body to both shoulder blades. Aspirin did not give relief. She began to vomit immediately after eating, despite the fact that she had been taking only soft solid foods. Two or three days before admission the pain became less severe, but the vomiting persisted and at this time there was coffee grounds vomitus. This condition persisted until admission and produced increasing weakness.

Physical examination showed an obese middle-aged woman mentally alert and talkative. She did not appear ill except for a sallow complexion and the fact that she was vomiting coffee grounds material without much nausea or retching. The sclerae were muddy but not definitely icteric. The heart was moderately enlarged. The aortic second sound was loud. There was a systolic blowing murmur at the apex and the base. The blood pressure was 280/135. The abdomen was soft and not tender. The examination was brief because manipulation brought on further hematemesis. No organs or masses were noted.

Examination of the urine showed a yellow test for sugar and a positive acetone. There was no albumin. The blood sugar was 312 milligrams. The carbon dioxide combining power was 51+ volumes per cent. Examination of the blood showed a red cell count of 5 000 000, 75 per cent hemoglobin and a white cell count of 17 000.

The temperature was 96.4°, the pulse 160, the respiratory rate 25.

In the Emergency Ward she was immediately given intravenous glucose five per cent, followed by thirty units of insulin. When she arrived in the medical ward she went into further collapse. The temperature was 100°, the pulse 160 and the respiration 45. The blood pressure was 100/70. She was cold and sweating. A clviss of 2½ per cent glucose was given, and 500 cubic centimeters of citrated blood by transfusion. The patient felt somewhat better and stopped vomiting. The pulse fell to 130 and the blood pressure rose to 130/70. This improved

condition lasted until seven o'clock the following morning. At that time her blood pressure fell to 60-70 systolic and the pulse became too feeble to count. A second transfusion of 500 cubic centimeters of citrated blood was given. That afternoon she vomited two more kidney basinfuls of coffee grounds material. The blood sugar was down to 114 milligrams. The carbon dioxide combining power was 50.7 volumes per cent. Her abdomen became fuller and more tense but no free fluid was demonstrated. There was a diffuse tenderness all over the abdomen, with some spasm. She rapidly failed and died that day.

DIFFERENTIAL DIAGNOSIS

DR OLIVER COPE. The essentials seem to me to be that this patient is a woman of fifty-eight years who, following a period of at least a week's duration of loss of appetite and vomiting, was found to have hypertension and was incriminated with diabetes.

The past history is lacking.

The essentials of the physical examination at the time of her entry are unavoidably casual because of the fact that the vomiting increased as a result of any manipulation.

In looking at the subsequent history the diabetes seems to me to be distinctly incidental, although apparently she was treated with that seriously in mind. I believe it was the kind of diabetes that might occur in a patient of her age with arteriosclerosis and a mild tendency to diabetes aggravated by starvation and vomiting. I therefore would rule out the diabetes and I would think of those things that might have increased her blood sugar level and caused the excretion of sugar in her urine. The first thing I think of is of course an infection, and I would rule out rarer things like bronzed diabetes. I do not think that a sallow complexion and muddy sclerae are enough to incriminate her in that regard.

When we consider her subsequent course during the hospital stay—first of all she was very talkative and alert, and then went into rapid collapse following only a week's history—I should think of peritonitis in spite of the fact that we are told that her abdomen showed no tenderness and no masses. Her symptoms are certainly consistent with peritonitis. They are, however, no more specific than upper abdominal discomfort and pain between both shoulder blades. Peritonitis in a woman of her age might arise from many different sources. The thing that one would want to know is what one could feel in her abdomen at the time one saw her. They felt nothing therefore it comes down to probabilities. I should like to commit myself and say that the most probable thing is an acute appendicitis which ruptured. The picture fits into that diagnosis. She had loss of appetite for two days and then sudden onset of pain and vomiting.

I omitted to speak of the coffee grounds material. There is no mention that that was actual blood. If so it would make one think of malignancy. It does not seem to me to fit into the picture of bleeding ulcer or of an uncomplicated intestinal obstruction. You could possibly get blood under the latter circumstance. I am still inclined, even though there was a positive guaiac, to say definitely that it was peritonitis. I am probably wrong, but I do not see any other way out.

As the cause of peritonitis the probability even at her age would be in favor of appendicitis. Also, since her symptoms were upper abdominal, in the examination of the abdomen it would be likely that the attention was paid during the cursory examination to the upper abdomen and that tenderness somewhere in the lower abdomen might have been overlooked. I think I must ascribe the symptoms to appendicitis in the absence of any earlier past history. I think it is peritonitis probably originating in a ruptured appendix.

CLINICAL DISCUSSION

DR TRACY B MALLORY. We have here an obviously very blind case in which many guesses would be possible. I wonder if anyone else would like to make a diagnosis.

DR E PARKER. I think it quite possible she had carcinoma of the stomach with perforation. This complication occurs now and then, and would explain the peritonitis and also the blood in the vomitus.

DR GEORGE A LELAND, JR. It appears from the record that on the morning after her admission I saw this patient in consultation and stated that I was unable to make a diagnosis but that I felt very certain that in her condition at that time exploratory laparotomy would be of no avail. I vaguely remember the case. At that moment she was perfectly pulseless, with cold extremities. Effort was being made to build her up with some fluids. That was less than six hours before she died.

In retrospect, and considering the history as given today, I am inclined to agree with Dr Cope that the hypertension and the diabetic condition are merely an unfortunate background of the individual and merely contributive rather than responsible for the very rapid dissolution that she underwent. As to what the acute condition was I am still very much in a quandary. With a patient of fifty-eight one thinks very seriously of malignancy of course. This woman had a red cell count of 5,000,000 and a hemoglobin of 75 per cent, which is fairly high for a malignancy of any long standing. On the other hand this blood picture is consistent with a cancer of non-ulcerated type without bleeding. The hematemesis is I think of course very significant in this case. I do not think we can pass it over lightly. I believe that the patient

had a malignancy which involved her stomach, either primarily as cancer of the stomach with acute massive hemorrhage, or else an extrinsic cancer perhaps originating from the large bowel or the adjacent pancreas which ulcerated through into the stomach. I believe that the primary cause of death was an acute emergency due to a cancer.

DR WILLIAM B BREED. One might guess pancreatitis as tying two of the conditions together, namely the appearance of peritonitis and the disturbance in the sugar metabolism. I am not sure that the hematemesis could be explained on the basis of pancreatitis, but one does see occasionally hematemesis with pancreatitis.

DR MALLORY. We certainly have seen cases of pancreatitis in which there has been a considerable elevation in blood sugar and the sudden appearance of sugar in the urine.

DR J H MEANS. I think that with the coffee grounds vomitus the chances of cancer are very great.

CLINICAL DIAGNOSES

Peritonitis, cause unknown
Intestinal obstruction
Diabetes mellitus

ANATOMIC DIAGNOSES

Thrombosis of the superior mesenteric, portal, splenic and pancreatic veins
Gangrene of the intestines
Generalized peritonitis
Ulcer of the esophagus with perforation into the posterior mediastinum and both pleural cavities
Partial obstruction of the inferior vena cava by a sclerosed thrombus with collateral circulation through the left ovarian vein
Chronic fibrous pleuritis
Arteriosclerosis, marked aortic, slight coronary and renal

PATHOLOGIC DISCUSSION

DR MALLORY. After having seen the autopsy on this case one can go back to one point in the story which I think one otherwise would overlook entirely, and that was that her presenting symptom had been pain between the two shoulder blades. She had two lesions which I am unable to connect directly. One, which I think probably explains that pain in the back and also explains the coffee grounds vomitus, was an ulcer of the esophagus which perforated into both pleural cavities. There was about 700 cubic centimeters of coffee grounds stomach material in the right pleural cavity and about 400 cubic centimeters of the same material in the left pleural cavity. The communication between the two pleural cavities was evidently digested by the gastric juice. That however

was not the cause of her death. In addition to that she had developed an acute mesenteric thrombosis starting in the superior mesenteric vein, running up the portal vein and involving the splenic vein. The small intestine from about one foot beyond the duodenum down nearly to the terminal ileum was completely gangrenous and secondary to that arose the peritonitis which had been suspected. A further finding—probably a historical landmark only—was an old thrombotic occlusion of the inferior vena cava, with a well-developed collateral circulation through a greatly dilated left ovarian vein.

A PHYSICIAN. Did that ulcer of the esophagus show any gastric tissue?

DR MALLORY. The postmortem digestion was so great that we were unable to recognize anything in its wall. I am quite sure it was not neoplastic. I think enough tissue was present for it to have been recognized if it had been.

DR FULLER ALBRIGHT. Did she have a high temperature before she died?

DR MALLORY. There was a terminal temperature of 105°.

DR ALBRIGHT. I saw a case in Vienna something like this one. Professor Eidheim explained it in the following way. If a person for several days before death is extremely sick so that tissue resistance is decreased and if he at the same time has a high temperature the gastric juice may run back into the esophagus and digest an opening through this organ. The gastric juice then flows down into the pleural cavity. The condition is most often seen in cerebral cases because of their tendency to develop hyperpyrexia.

DR MALLORY. Although in this case we have a history of pain high in the back, suggesting that this is an earlier lesion.

DR EDWARD L. YOUNG, JR. We see the same thing in cases of lateral sinus thrombosis with tremendous elevation in temperature in the last few hours.

CASE 20202

PRESENTATION OF CASE

First admission. The patient, a sixty-six year old Canadian laundress had been in good health until one year before admission. At that time she began to have a severe diarrhea. The discharge consisted of mucus, blood and thin watery feces. At times she was almost incontinent. This diarrhea continued, and was often associated with a sensation of fullness in the rectum. She had no other symptoms and had been working until two weeks before admission. There had been no jaundice, weakness, abdominal pain or night sweats. She had lost twenty pounds in the past three months.

Twenty-seven years before admission she had pleurisy which necessitated a three months' stay at a hospital. She was discharged feeling well,

but every winter since then had developed a cough associated with white sputum, occasionally blood streaked. During that year she fractured several ribs in an accident. For the past five years she had had dyspnea on climbing stairs. She had no edema. Three years before admission both knees became painful and swollen. A physician made a diagnosis of rheumatism. Two years before admission she fell down stairs and refractured two ribs. There was no history of pneumonia, chorea, or association with tuberculosis.

Physical examination showed the left pupil to be greater than the right. It did not react to light and was slightly irregular. The chest was slightly barrel shaped. The heart was enlarged to the left. There was a precordial systolic murmur, loudest at the aortic area. The aortic second sound was booming and greater than the pulmonary second. The blood pressure was 190/90. The abdomen was soft and slightly tender in the lower portion. No masses were felt. Rectal examination showed several large external hemorrhoids. Eight centimeters above the anus was a cauliflower polypoid mass which occupied the right half of the rectal wall. It was about 5 centimeters in diameter bled easily, but did not completely obstruct the lumen. The knee jerks and ankle jerks were absent.

Examination of the urine was negative. The blood showed a red cell count of 4,500,000, a hemoglobin of 90 per cent and a white cell count of 5,500. A Hinton test was negative. The non-protein nitrogen of the blood was 25 milligrams. A phenolsulphonephthalein test showed 60 per cent excretion at the end of two hours.

An electrocardiogram showed normal rhythm, rate 70 and left axis deviation. A lumbar puncture was negative.

X-ray examination of the chest showed enlargement of the heart. The transverse diameter was 13.8 centimeters and that of the chest 23.8 centimeters.

Six days after admission a first stage abdominal perineal excision of carcinoma of the rectum was performed. The postoperative course was stormy. She developed pulmonary collapse and some pneumonia. On the seventeenth day after operation a second stage resection of carcinoma of the rectum was performed. Following this she was given a transfusion of 400 cubic centimeters of whole blood. This time she did well postoperatively. On the thirty-third day after the first operation she was discharged to a convalescent home.

Second admission. Two months after her previous discharge.

She entered this time because of a fecal fistula in the posterior wound of the old abdominal perineal resection. The colostomy had nearly fallen back into the abdomen. The opening was very small. A plastic to the colostomy was performed under local anesthesia. She was dis-

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taminating the peritoneal cavity. That procedure, in view of the twenty-four hours of obstructive symptoms, is somewhat questionable. I think it would have been distinctly better to drain the bowel at that time, particularly in view of the evacuation of some fifty ounces of fluid a few hours later. There would be no more risk in putting a tube in at operation. That is the procedure that is usually carried out.

After the evacuation of fifty ounces of fluid the drainage stopped, the patient began to get worse, and then a period of thirty-six hours elapsed during which there was gradually progressive distention and no drainage. On the face of it I should say that there was probably an obstructing point somewhere in the small bowel above. It may have been that the patient was developing peritonitis without any particular evidence of spasm, but it seems to me more likely that there was intestinal obstruction higher up. Knowing the type of operation that was probably done, a very likely situation is that the small intestine may have rotated from right to left around the colostomy and formed a condition which, although it might not obstruct all the time, at the same time was a definite factor in the obstruction. That sort of thing occurs with reasonable frequency in what essentially amounts to an intra-abdominal hernia around the left side of the colostomy with interference in circulation due to the drag on the mesentery. This may have been the situation. I should think from the history that it would probably have been wise to have gone in rather promptly after the drainage stopped and the distention increased and that under novocain anesthesia one could have put a catheter in a loop of distended ileum somewhere.

DR ROBERT R. LINTON: I saw this patient when she came into the Emergency Ward the last time. The picture at that time was certainly one of intestinal obstruction, most probably of the small bowel, and that was why operation was advised. Dr. Stewart, who did the operation, reported that the small bowel was somewhat dilated, but not so much as the cecum. The cecum was so tense and dilated that it was impossible to get a tube into it, so he thought it was much safer to suture it to the peritoneal surface and open it later. The colostomy was irrigated before operation, with practically no return. It seemed pretty definite that she had mechanical obstruction.

A PHYSICIAN: Would the dilated cecum more or less rule out a point of obstruction above it?

DR HAYDEN: It would, unless a small intestinal obstruction occurred a little later, when the free flow from the cecostomy stopped. There was no reason why any quantity of material

would collect in the cecum unless there was obstruction below it.

CLINICAL DIAGNOSES

Acute intestinal obstruction
Carcinoma of the rectum

ANATOMIC DIAGNOSES

Mesenteric thrombosis (embolism?)
Operative wounds: old resection of anus, rectum and sigmoid (cancer of rectum), recent cecostomy
Peritonitis: slight, generalized
Arteriosclerosis: marked aortic, moderate coronary, mesenteric and renal
Cardiac infarct, old
Mural thrombi, left ventricle and aorta
Healed pulmonary tuberculosis, left
Chronic fibrous pleuritis, bilateral
Cervical polyps

PATHOLOGIC DISCUSSION

DR TRACY B. MALLORY: The obstruction, if one is to call it obstruction in this case, was similar to that in the last. It consisted in an infarction of the entire intestinal tract, in this case from the duodenum not merely down to the terminal ileum but also including the major part of the large intestine. Whereas in the last case the infarction was of venous origin from a thrombosis to the branches of the portal vein, in this case it was of arterial origin from occlusion of the mesenteric artery. The occlusion may have been a local thrombotic affair, since a fairly marked degree of arteriosclerosis was present in the mesenteric artery itself and numerous atheromatous ulcerations were formed in the aorta. Or it is possible that it may have originated in an embolus, for which she had a perfectly good focus in an infarct of the heart with an overlying mural thrombus. From this a clot might well have slipped off and become the starting point for the gradually progressive thrombosis of the mesenteric artery. The coronary arteries were free from occlusion. This infarct was a very old one. I think we must assume that she had at one time a coronary occlusion followed by almost complete recanalization of the artery.

A SURGEON: There were no metastases?

DR MALLORY: No.

DR HOLMES: Was there anything to account for the unusual position of the esophagus?

DR MALLORY: We did not notice anything.

The third case of this group, in which much of the general discussion of the group appears, will be published next week.

charged improved two weeks after admission. The colostomy was working well.

History of interval Three days after her discharge she began to have upper abdominal cramps which continued every few minutes through the whole day and evening. Soon after the onset of the pain she vomited. She vomited several times after this, at first food, then a small amount of blood and blood clot, and finally material which was fecal in character. Her colostomy was discharging feces at the time of entry.

Third admission, four days after her discharge.

Physical examination was similar to that at the second entry except that the heart impulse was felt 12 centimeters to the left of the mid-sternal line in the fifth interspace. The pulse was rapid, 110. The blood pressure was 125/100. The abdomen was moderately distended, with active peristalsis. It was soft and not spastic.

Examination of the blood showed a white cell count of 12,000. The non protein nitrogen was 52 milligrams. The carbon dioxide combining power was 33.9 volumes per cent. The serum protein was 3.9 per cent.

On the day of admission an extraperitonealization of the cecum was performed under local anesthesia. The dilated cecum was sewed to the peritoneal surface and a right lateral lower quadrant wound packed open. Three hours later a tube was sewed into the cecum and placed on six centimeters water suction. Over fifty ounces of fluid feces was evacuated. The cecostomy failed to drain for the next thirty-six hours. There was increasing abdominal distention. The temperature and pulse rose to 104° and 140 respectively. Two days after admission the patient died.

X-RAY INTERPRETATION

DR GEORGE W HOLMES. These films were taken four months before death and may have no bearing on the immediate trouble.

The films taken of the abdomen show shadows which could be either in the kidney or the gall bladder, but which have the characteristic appearance of gall stones. We can be fairly certain that she had gall stones from this film alone.

In the film of her chest, also taken four months before death, the most striking thing is the marked increase in the supracardiac shadow, probably due to tortuosity of the aorta and not to actual dilatation. Here we have a very good chance to measure the diameter of the aorta between the esophagus and the outer side of the shoulder. I think that is slightly increased, but not more than one would expect at her age. The increase is not great. The curve of the left ventricle is a little prominent. One would interpret these findings as being due to arteriosclerosis with some hypertension, with possibly some dilatation of the aorta.

The position that the esophagus takes is also interesting. It seems to lie very close to the descending aorta. We have seen a few cases of this type, and we have been wondering whether there were adhesions or some abnormality of the mediastinum that fixed the esophagus to the aorta.

This is the oblique view and shows the aorta very well. This is the lower end of the esophagus in its normal position.

DIFFERENTIAL DIAGNOSIS

DR E PARKER HAYDEN. This history is of course a very typical one of cancer of the rectum, confirmed by operation, so that the obscurity of diagnosis dates from the postoperative complications.

This woman was sixty-six years old, and had, I judge, a certain amount of cardiovascular disease, which probably had very little to do with her subsequent death. In view of Dr Holmes' x-ray interpretation, however, it may have had more to do with it than I think it did.

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taminating the peritoneal cavity That procedure, in view of the twenty-four hours of obstructive symptoms is somewhat questionable I think it would have been distinctly better to drain the bowel at that time, particularly in view of the evacuation of some fifty ounces of fluid a few hours later There would be no more risk in putting a tube in at operation That is the procedure that is usually carried out

After the evacuation of fifty ounces of fluid the drainage stopped, the patient began to get worse, and then a period of thirty six hours elapsed during which there was gradually progressive distention and no drainage On the face of it I should say that there was probably an obstructing point somewhere in the small bowel above It may have been that the patient was developing peritonitis without any particular evidence of spasm, but it seems to me more likely that there was intestinal obstruction higher up Knowing the type of operation that was probably done, a very likely situation is that the small intestine may have rotated from right to left around the colostomy and formed a condition which although it might not obstruct all the time, at the same time was a definite factor in the obstruction That sort of thing occurs with reasonable frequency in what essentially amounts to an intra-abdominal hernia around the left side of the colostomy with interference in circulation due to the drag on the mesentery This may have been the situation I should think from the history that it would probably have been wise to have gone in rather promptly after the drainage stopped and the distention increased, and that under novocain anesthesia one could have put a catheter in a loop of distended ileum somewhere

DR ROBERT R. LINTON I saw this patient when she came into the Emergency Ward the last time The picture at that time was certainly one of intestinal obstruction, most probably of the small bowel, and that was why operation was advised Dr Stewart, who did the operation, reported that the small bowel was somewhat dilated, but not so much as the cecum The cecum was so tense and dilated that it was impossible to get a tube into it, so he thought it was much safer to suture it to the peritoneal surface and open it later The colostomy was irrigated before operation, with practically no return It seemed pretty definite that she had mechanical obstruction

A PHYSICIAN Would the dilated cecum more or less rule out a point of obstruction above it?

DR HAYDEN It would, unless a small intestinal obstruction occurred a little later, when the free flow from the cecostomy stopped There was no reason why any quantity of material

would collect in the cecum unless there was obstruction below it.

CLINICAL DIAGNOSES

Acute intestinal obstruction
Carcinoma of the rectum

ANATOMIC DIAGNOSES

Mesenteric thrombosis (embolism?)
Operative wounds old resection of anus, rectum and sigmoid (cancer of rectum), recent cecostomy
Peritonitis slight generalized
Arteriosclerosis marked aortic, moderate coronary, mesenteric and renal
Cardiac infarct, old
Mural thrombi, left ventricle and aorta
Healed pulmonary tuberculosis, left
Chronic fibrous pleuritis, bilateral
Cervical polyps

PATHOLOGIC DISCUSSION

DR TRACY B. MALLORY The obstruction, if one is to call it obstruction, in this case was similar to that in the last It consisted in an infarction of the entire intestinal tract, in this case from the duodenum not merely down to the terminal ileum but also including the major part of the large intestine Whereas in the last case the infarction was of venous origin from a thrombosis to the branches of the portal vein, in this case it was of arterial origin from occlusion of the mesenteric artery The occlusion may have been a local thrombotic affair, since a fairly marked degree of arteriosclerosis was present in the mesenteric artery itself and numerous atheromatous ulcerations were formed in the aorta Or it is possible that it may have originated in an embolus, for which she had a perfectly good focus in an infarct of the heart with an overlying mural thrombus From this a clot might well have slipped off and become the starting point for the gradually progressive thrombosis of the mesenteric artery The coronary arteries were free from occlusion This infarct was a very old one I think we must assume that she had at one time a coronary occlusion followed by almost complete recanalization of the artery

A SURGEON There were no metastases?

DR MALLORY No

DR HOLMES Was there anything to account for the unusual position of the esophagus?

DR MALLORY We did not notice anything

The third case of this group, in which much of the general discussion of the group appears, will be published next week

charged improved two weeks after admission. The colostomy was working well.

History of interval Three days after her discharge she began to have upper abdominal cramps which continued every few minutes through the whole day and evening. Soon after the onset of the pain she vomited. She vomited several times after this, at first food, then a small amount of blood and blood clot, and finally material which was fecal in character. Her colostomy was discharging feces at the time of entry.

Third admission, four days after her discharge.

Physical examination was similar to that at the second entry except that the heart impulse was felt 12 centimeters to the left of the mid-sternal line in the fifth interspace. The pulse was rapid, 110. The blood pressure was 125/100. The abdomen was moderately distended, with active peristalsis. It was soft and not spastic.

Examination of the blood showed a white cell count of 12,000. The non protein nitrogen was 52 milligrams. The carbon dioxide combining power was 33.9 volumes per cent. The serum protein was 3.9 per cent.

On the day of admission an extraperitonealization of the cecum was performed under local anesthesia. The dilated cecum was sewed to the peritoneal surface and a right lateral lower quadrant wound packed open. Three hours later a tube was sewed into the cecum and placed on six centimeters water suction. Over fifty ounces of fluid feces was evacuated. The cecostomy failed to drain for the next thirty-six hours. There was increasing abdominal distention. The temperature and pulse rose to 104° and 140 respectively. Two days after admission the patient died.

X-RAY INTERPRETATION

DR GEORGE W HOLMES These films were taken four months before death and may have no bearing on the immediate trouble.

The films taken of the abdomen show shadows which could be either in the kidney or the gall bladder, but which have the characteristic appearance of gall stones. We can be fairly certain that she had gall stones from this film alone.

In the film of her chest, also taken four months before death, the most striking thing is the marked increase in the supracardiac shadow, probably due to tortuosity of the aorta and not to actual dilatation. Here we have a very good chance to measure the diameter of the aorta between the esophagus and the outer side of the shoulder. I think that is slightly increased, but not more than one would expect at her age. The increase is not great. The curve of the left ventricle is a little prominent. One would interpret these findings as being due to arteriosclerosis with some hypertension, with possibly some dilatation of the aorta.

The position that the esophagus takes is also interesting. It seems to lie very close to the descending aorta. We have seen a few cases of this type, and we have been wondering whether there were adhesions or some abnormality of the mediastinum that fixed the esophagus to the aorta.

This is the oblique view and shows the aorta very well. This is the lower end of the esophagus in its normal position.

DIFFERENTIAL DIAGNOSIS

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although severe renal damage, particularly in the form of tubular nephritis, is also an important factor

The chief danger lies in the uncontrolled sale of this powerful agent to the laity. There is nothing that will prevent its use in the various patent medicines for reducing. There is nothing to prevent its over-the-counter sale by druggists. Potentially dangerous when prescribed by physicians to patients under strict supervision, it may be deadly to those taking it without competent advice. All too often the uninitiated and enthusiastic seeker of slimmness falls into the same difficulty as that met with by the lay user reported by the London correspondent in the *Journal of the American Medical Association*. Although the dose was stated to be one capsule a day she took seventeen capsules in a three-day period and died.

It is to be hoped that as wide publicity will be given to the dangers of this metabolism stimulating substance as has been given to its possible advantages.

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THE TAX IMPOSED BY TUBERCULOSIS

The article by Dr C. E. A. Winslow on page 1084 of this issue presents in impressive form the tax levied on communities by tuberculosis. Unlike the increasing taxation of the federal and state governments, Dr Winslow shows that the burden of tuberculosis has been diminishing, and may be less if we continue to concentrate on the problems incident to this disease.

Until Koch's revelation of the pathology of the disease, little progress had been made in combating it. In the light of the discovery of the bacillus, physicians and public health authorities united in patient study of the possibilities of control, with the result that many thousands of lives have been saved and the great proportion of the tuberculosis tax has been lifted. Fortunately, Koch's discovery opened the fields of scientific research and led to other triumphs in dealing with disease which in turn diminish the burden of morbidity and mortality. It is well that due credit should be given to scientific medicine through its assistance in diminishing the taxable burden of disease.

Further progress will be made if and when more general knowledge permeates society at large followed by more generous cooperation with physicians and public health agencies.

TRIBUTE TO
DR WILLIAM HENRY WELCH

SUPPLEMENTING the editorial of last week and the letter by Dr Joseph H. Pratt, we are privileged to present three more references to Dr Welch which appear on pages 1087 to 1089.

Dr Welch visited Boston on many occasions and delivered several addresses here. His Ether Day Address at the Massachusetts General Hospital in 1908 and that on the importance of medical libraries in 1930 will be remembered by those privileged to hear them.

Those who were associated with or studied under him are unanimous in attributing to this eminent man great influence in the progress of medicine in this country.

His love for Johns Hopkins University School of Medicine is shown by the bequest of one-fourth of his estate, including his medical, scientific, and literary books, and medals to this organization.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors

BOWLER, JOHN P. A.B., M.Sc., M.D. Harvard University Medical School 1919 F.A.C.S. Dean, Dartmouth Medical School Surgeon, Hitchcock Hospital, Hanover, New Hampshire. Address Hitchcock Clinic, Hanover, New Hampshire. Associated with him is GILE, JOHN F. A.B., M.D. Harvard University Medical School 1920 F.A.C.S. Instructor, Dartmouth Medical School. Surgeon, Hitchcock Hospital, Hanover, New Hampshire. Address Hitchcock Clinic, Hanover, New Hampshire. Their subject is "Compression Fractures of Vertebral Bodies." Page 1052.

MORSE, JOHN L. A.M., M.D. Harvard University Medical School 1891 F.A.A.P. Professor of Pediatrics Emeritus, Harvard Medical School. Consulting Physician Children's Hospital, Infants' Hospital and Beth Israel Hospital. Member, New England Pediatric Society, American Pediatric Society, Association of American Physicians and Boston Obstetrical Society. His subject is "The Necessary Requirements in a Minimum Diet for Infants and Children." Page 1057. Address 319 Longwood Avenue Boston, Massachusetts.

LENNON, WILLIAM G. A.B., A.M. Sc.D., M.D. Harvard University Medical School 1913. Instructor in Neurology, Harvard Medical School. Junior Visiting Neurologist Boston City Hospital. His subject is "The Use of Ergotamine Tartrate in Migraine." Page 1061. Address 909 Medical Building Boston City Hospital, Boston, Massachusetts.

The New England Journal of Medicine

SUCCESSOR TO

THE BOSTON MEDICAL AND SURGICAL JOURNAL

Established in 1828

Published by THE MASSACHUSETTS MEDICAL SOCIETY
under the jurisdiction of the

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SUBSCRIPTION TERMS \$6.00 per year in advance postage paid
for the United States Canada \$7.05 per year \$8.88 per year
for all foreign countries belonging to the Postal Union

Material for early publication should be received not later
than noon on Saturday Orders for reprints must be sent to
the Journal office 8 The Fenway

The Journal does not hold itself responsible for statements
made by any contributor

Communications should be addressed to The New England
Journal of Medicine 8 The Fenway, Boston, Mass

The Massachusetts Medical Society

DISTINGUISHED SPEAKERS FOR THE ANNUAL MEETING

THE Annual Dinner of the Massachusetts Medical Society will take place on June 5, 1934 at 7 P M, in the Ballroom of the Hotel Bancroft, Worcester It is the chief social function of the Society In recent years, however, the attendance has been disappointingly small, possibly because the charge has been high for these times, possibly because the names of the speakers have not been made public

This year the tickets have been reduced to two dollars, and an excellent dinner will be served

The President of the Society has announced that the following distinguished speakers will be his guests

His Excellency The Governor of Massachusetts

His Honor The Mayor of Worcester

The Honorable James M Morton, Jr,
Judge of the United States Court of Appeals

The Right Reverend Henry K. Sherrill,
D D, Episcopal Bishop of Massachusetts

Dr Lewis Perry, Headmaster of Phillips Exeter Academy

It is also to be remembered that the Shattuck Lecture on Monday evening will be given by Dr Warfield T Longcope, Physician in Chief, The Johns Hopkins Hospital and Professor of Medicine of Johns Hopkins University School of Medicine His subject will be "The Importance of Disturbances in Nutrition in Oedematous States"

Dr Lincoln Davis, President of the Boston Medical Library and Consulting Surgeon, Massachusetts General Hospital, will present the Annual Discourse on Wednesday at 1 P.M His subject will be "The Objectives of Medical Progress"

With this impressive list of speakers, a large registration of the Fellows of the Society is reasonably to be expected

THE DANGER OF DINITROPHENOL AS A REDUCING AGENT

THE World War through the extensive manufacture of trinitrotoluol and related products served to call attention to the marked toxic character of these substances Their absorption was characterized by extensive liver damage, pigmentation of the skin An accompanying increase in pulse rate and temperature emphasized their general biological effect in enhancement of oxidative processes

Dinitrophenol, a closely related compound to TNT, has long been known in the laboratory but only recently has been brought to popular attention through the articles by Cutting and Tainter^{1 2} in the *Journal of the American Medical Association* These articles emphasized the value of this chemical as a metabolism raising agent through acceleration of oxidative processes They brought forward strong evidence for its utility, raising the basal metabolic rate 30 to 50 per cent without symptoms Under ordinary conditions fat is apparently oxidized without the development of acidosis

Unfortunately strong emphasis was not laid on the toxicity of this compound although warning was given as to its danger Already cases of death due to its use are being reported here and abroad³

This drug has great potential danger because of a narrow margin between the toxic dose and the therapeutic dose Fortunately it is fairly rapidly excreted by the kidneys so the possibility of accumulative effects is relatively slight. In the cases of death thus far reported liver damage appears to be the outstanding factor

to previous partially controlled infection which suddenly lights up in a form too severe to be checked by our routine methods. The hope of preventing such catastrophes lies in the earlier detection of incipient infection—preferably in childhood, when the seeds of later trouble are generally sown. The new methods of taking x-ray pictures of large groups of school children at a minimum cost brings promise of a better defense against the tubercle bacillus than we have ever been able to set up before.

The cost of a well-organized tuberculosis program (excluding the cost of sanatorium care which is largely treatment rather than prevention) is less than 10 cents per year for each person in the gen-



No matter how much the budget is cut children must not suffer. This little boy is being protected against tuberculosis by having a tuberculin test.

eral population. The results far outweigh this in significant expenditure. We may illustrate by a single instance. The reduction in the death rate from pulmonary tuberculosis in Syracuse, N. Y., for the decade 1922-1931 as compared with the decade 1912-1921 amounted to a saving of 115 lives a year. This takes no account of the far greater savings accomplished between 1892 and 1912 but merely measures the additional accomplishment after a more intensive community program was inaugurated in 1923. On a conservative estimate based on tables of the value of a human life at different ages, this additional reduction amounted to an economic saving of over a million and a half dollars a year to the community—based on life-saving alone and with no allowance for the burdens of disability and medical care. The total cost of the enlarged and almost ideal tuberculosis-control machinery of Syracuse was less than twelve thousand dollars. By paying one dollar in taxes to the city and the Community Chest, Syracuse saved paying one hundred dollars in taxes to the tubercle bacillus.

The question then is not whether we shall pay taxes or not, but how much we shall pay and for what. We can contribute a small sum to our health departments and clinics and nursing associations and tuberculosis associations for prevention or we

can pay a much larger sum as a tax on unprevented disease for the care of the sick, the support of the invalid, the burial of the dead, and the loss of man power. We have reduced the tax levied by disease during the past thirty years to a fraction of what it once was. We cannot afford to let our progress be nullified by the panic parsimony which is the enemy of true economy. We must rather go on with all the weapons at our command to the ultimate conquest of tuberculosis. "A few cents for defense, rather than millions for tribute," might well be our motto. The tax laid upon human vitality by preventable disease is one which we can abate if we have the courage to support in this crisis the official and the voluntary health agencies which have defended us so successfully in the past.

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

DIVISION OF ADULT HYGIENE

NUMBER 13 *Cancer Clinic Bulletin* MAY 1, 1934

CANCER CLINICS AT BOSTON AND PONDVILLE

On Wednesday April 11, 1934 the last of the three Cancer Clinics arranged for the season of 1933-1934 by the Cancer Committee of the Massachusetts Medical Society, was held at the Massachusetts General Hospital in Boston and at the State Cancer Hospital in Pondville. About forty-five of the physicians on the staffs of the organized Cancer Clinics in Massachusetts were in attendance.

The Clinic at the Massachusetts General Hospital began at 9:30 A.M. in the Surgical Amphitheatre, with an operative clinic. Dr. E. M. Daland operated for cancer of the lip with radical neck dissection.

Dr. Channing C. Simmons did a radical amputation for cancer of the breast and Dr. J. V. Meigs demonstrated the application of radium in the treatment of a case of cancer of the cervix of the uterus.

Demonstrations were then given in the Surgical Amphitheatre as follows. Dr. E. P. Hayden showed an unusual tumor of the mouth, which was removed beneath the angle of the jaw, and proved to be probably a fetal adenoma of the aberrant thyroid. He also demonstrated the specimen of a branchial cyst which he had recently removed by operation.

Dr. E. M. Daland demonstrated a plastic operation for cancer of the lip and showed a case of extensive lymphangioma.

Dr. Grantley W. Taylor showed a case of disease of the ulna due to syphilis in which the differential diagnosis of bone sarcoma was suggested by the x-ray plates. Also an advanced and inoperable case of cancer of the breast in a young woman who was given x-ray treatment to produce an artificial menopause. He also demonstrated a case of advanced cancer of the tonsil which had had (1) preliminary x-ray radiation, (2) a dental cleansing of the month followed by (3) a two-thousand r unit treatment with x-ray, and (4) the insertion of radium seeds. This treatment produced a severe reaction followed by marked symptomatic improvement. He also demonstrated another case of inoperable cancer of the

JOHNSON, ALLEN S. A.B., B.A., M.D. Harvard University Medical School 1927 Assistant Visiting Physician, Springfield Hospital Visiting Physician, Tuberculosis Division, Springfield Isolation Hospital His subject is "The Parenteral Administration of Paraldehyde for the Control of Pain and Convulsive States" Page 1065 Address 121 Chestnut Street, Springfield, Massachusetts

HALL, WILLIAM E. A.B., M.D. Yale University School of Medicine 1925 Yale Cardiologist, Meriden Hospital Attending Physician, Meriden Hospital Address Professional Building, Meriden, Connecticut Associated with him is

MURDOCK, THOMAS P. M.D. University of Maryland School of Medicine 1910 Chief of Medical Service, Meriden Hospital, Meriden, Connecticut Address Meriden Hospital, Meriden, Connecticut Their subject is "Foreign Protein Sensitization with Meningeal Involvement Due to the Use of Vaccine" Page 1067

COTTON, FREDERIC JAY, M.D., and MORRISON, GORDON MACKAY, M.D. See page 817, issue of April 12, for records of authors Their subject is "Recurrent Dislocation of the Shoulder" Page 1070

CHEEVER, AUSTIN W. A.B., M.D. Harvard University Medical School 1914 Assistant in Dermatology and Syphilology, Harvard University Assistant Dermatologist, Children's Hospital Visiting Dermatologist, Beth Israel Hospital Consulting Dermatologist, Framingham-Union, Waltham, Goddard, and Brockton Hospitals His subject is "Progress in the Diagnosis and Treatment of Syphilis, 1933" Page 1072 Address 472 Commonwealth Avenue, Boston, Massachusetts

MISCELLANY

ONE WAY TO REDUCE TAXES

BY DR. C. E. A. WINSLOW*

The first definition of a "tax" is a "contribution levied on persons, property, or business for support of government." A second meaning of the word is a 'strain or heavy demand' upon a person or a community. We hear a great deal today about the first kind of taxes. It might be wise to give some thought to the second.

From the standpoint of "strain or heavy demand" some of our most exacting tax collectors are the germs of the communicable diseases. In 1900 the bacillus of tuberculosis taxed the people in the United States to the tune of 195 lives for every hundred thousand persons in the population. That is this tax collector took the life of one person out of every 500 each year. In addition it collected the cost of medical and hospital

care and the cost of supporting in partial or complete idleness at least one person out of every 150.

By 1930 the death rate from tuberculosis† had fallen from 195 to 67 per 100,000. We had reduced the tax paid to this public enemy to one life out of every 1500 persons in the population with a similar reduction of two-thirds in the burden of sickness and disability. This is a sort of tax reduction which is well worth while.



Courtesy Henry Street Visiting Nurse Service

Public health is not just a vague name to people who are familiar with the Public Health nurse

How has this result been accomplished? By legislative machinery for the reporting of cases, by segregating or educating the consumptive so as to avoid infection of others, by eradication of bovine tuberculosis and pasteurization of milk, by public health nursing service to seek out contacts and early cases and bring them under medical care, by clinic service for early diagnosis by sanatoria for treatment, and by systematic follow up and supervision of the arrested case to hold the disease process under control. Simple, efficient, well tried public health machinery has accomplished the task. Its efficacy has been fully tested during the past three years when the potential effects of the depression upon the death rate have been warded off except in certain relatively small sections of the population where deprivation has been greatest. It is neither chance nor some hypothetical biological change which has brought about results for these results, in individual communities, have again and again been shown to vary in relation to the provision of community machinery for controlling the disease.

Recently, a new weapon has been placed in our hands. Experience has shown that many of the deaths which still occur from tuberculosis are due

*Professor of Public Health School of Medicine Yale University

†Based on figures for Registration States of 1900

or susceptibility to cancer in certain persons, or else that the action of some factor favoring the development of malignancy is of importance

The multiple cancers occur at practically the same age as do single cancers, and the average duration from the onset of the earlier tumor to death is about three years

The lesson to be drawn from these findings is that even though a person has been cured of cancer

he is not free from danger of that disease in fact he is three times more likely to develop a new cancer than a person who has never had cancer

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COMPARISON OF DISEASE INCIDENCE IN CONNECTICUT WITH 1933 AND SEVEN YEAR AVERAGE

MONTH ENDING APRIL 28, 1934

Diseases	1934				Average cases reported for week corresponding to Apr 28 for past seven years	1933			
	Week ending Apr 7	Week ending Apr 14	Week ending Apr 21	Week ending Apr 28		Week ending Apr 8	Week ending Apr 15	Week ending Apr 22	Week ending Apr 29
Actinomycosis	1	—	—	—	—	—	—	—	—
Cerebrospinal Neu	1	2	1	1	1	—	1	—	—
Chicken Pox	71	88	91	127	94	159	136	190	158
Conjunctivitis Inf.	8	—	—	3	5	—	—	1	—
Diphtheria	3	3	1	3	16	4	5	5	7
Dysentery Bacillary	—	—	—	1	—	—	—	—	—
Encephalitis Epid	—	—	1	—	—	—	—	—	1
German Measles	1	4	2	—	32	9	4	7	6
Influenza	—	6	2	—	7	19	7	10	5
Measles	23	55	52	71	292	275	242	266	273
Mumps	118	144	126	131	81	117	88	86	84
Paratyphoid Fever	—	—	—	—	—	—	—	2	—
Pneumonia (Broncho)	19	30	24	17	31	19	22	22	24
Pneumonia (Lobar)	29	31	45	26	41	40	25	32	20
Scarlet Fever	77	64	91	58	88	167	140	118	134
Septic Sore Throat	1	2	1	—	2	2	—	5	1
Smallpox	—	—	—	—	1	—	—	2	9
Tetanus	—	—	—	1	—	—	—	—	1
Trichinosis	—	—	—	—	—	—	1	—	—
Tuberculosis (Pul)	28	23	24	16	33	34	15	37	30
Tuberculosis (O F)	4	1	2	1	4	1	2	2	3
Typhoid Fever	2	1	1	—	1	—	—	1	—
Undulant Fever	1	—	3	—	—	1	—	—	1
Whooping Cough	95	44	66	81	69	112	88	81	112
Gonorrhea	25	13	21	34	30	23	16	33	23
Syphilis	56	42	48	75	45	43	23	32	62

Remarks No cases of Asiatic cholera glanders plague or yellow fever during the past seven years

CORRESPONDENCE

TRIBUTES TO THE MEMORY OF DR. WILLIAM HENRY WELCH

May 7, 1934

Editor *New England Journal of Medicine*

There are so many things to be said of Dr. Welch that one must exercise great restraint not to talk about him too much. To the student who knew him

only as a lecturer, perhaps the marvelous amount of information he possessed was most impressive but ter acquaintance revealed the remarkably clear mind, wide outlook and sound judgment. A quiz by Dr. Welch was always welcomed by the students because they were sure he would be not only charitable to ward their ignorance but most helpful in suggesting new points of view new lines of investigation, and hitherto unknown sources of information.

His positive and considerable contributions to sci

pharynx and palate of Grade II Malignancy in a man, which also improved under the plan of treatment used in the previous case. Dr Taylor also spoke of the neurosurgical relief of pain by alcoholic injection or resection of the branches of the fifth nerve. The Clinic then was adjourned to Pondville, where a luncheon was provided by the courtesy of the State Department of Public Health.

The following short papers were given

Dr Grantley W Taylor—Cancer of the Mouth in Women

Dr Roger Graves—Treatment of Cancer of the Penis (Two cases shown)

Dr Joe V Meigs—Carcinoma of the Cervical Stump

Dr Ernest M Daland—Lymphatic Drainage in Cancer

Drs. Richard Dresser and Charles Dumas showed three cases that were receiving x ray treatment for cancer of the upper esophagus, cancer of the buccal mucosa and cancer of the tongue

Dr Daland showed two cases of extensive cancer of the lower lip, one before and one after operation, a rope graft under construction for a deformity of the buccal mucosa, and an extensive carcinoma treated by x ray, surgery, and a plastic operation

Dr Taylor showed an inflammatory type of cancer of the breast and another breast case with radium needles in situ.

Dr Meigs showed a patient six months pregnant with an early cancer of the cervix and invited discussion as to the proper treatment.

Dr Graves showed a cancer of the prostate after perineal prostatectomy

Dr Merrill demonstrated a lymphoma case and a possible cancer of the lung

The residents showed a melanotic sarcoma of the thigh, a cancer of the jejunum (postoperative)

The meeting adjourned at 5 00 P M

On Tuesday, April 17, by invitation of the Lawrence Cancer Committee, seventeen members of the Essex North District attended the cancer clinic where Doctor Channing Simmons acted as consultant.

Multiple Cancers

The study of multiple primary malignant tumors has gradually shifted from the mere accumulation of case records to a comprehensive study of the implications of this somewhat unusual occurrence. Interest is no longer so much aroused by the mere occurrence of multiple cancers. The significance of the frequency or infrequency of multiple tumors now holds the center of the stage, as occurrence of these tumors may throw light on the but vaguely understood problems of resistance or susceptibility to cancer. Several comprehensive studies of the subject have been made, one of the first being that of Major¹, followed by Owen², and the most recent by Warren and Gates³. In addition to these a special study of multiple cancers of the mouth based on material from the Huntington Hospital, has been

made by Lund⁴, whose findings are in essential accord with those of Warren and Gates

In the paper by the latter authors, 1259 cases of multiple malignant tumors are collected from the literature, together with their own cases

Studies of the frequency of this condition are even more relatively unsatisfactory, as various authors differ considerably in the criteria that they lay down for the definition of this condition. The most rigid criteria are those of Billroth, that each tumor must have a different histologic appearance, that the tumors must arise in different locations, and that each must produce its own metastasis. This last requirement particularly rules out a very large number of cancers and results in a falsely low recording of the incidence of multiple malignant tumors. A perhaps fair standard is that set up by Warren and Gates, namely, each of the tumors must present definite evidence of malignancy, each must be distinct, and the probability of one being a metastasis of the other must be excluded

Some patients show an extraordinarily large number of different cancers, the most numerous being a case reported by Rappin⁵, who showed over 200 separate carcinomata.

Up to 1932, 111 cases of three or more multiple malignant tumors had been reported. Double cancer is, of course, much more frequent than this first group. Among the double cancers multiple cancers of the gastrointestinal tract are particularly frequent. This is perhaps caused by the frequent origin of carcinoma from mucosal polypi of the intestine. Warren states he has seen not infrequently multiple cancers of the large bowel associated with multiple polypi.

In the different series of cases reported in sufficient detail to estimate the frequency of this condition the variation is strikingly wide. Some authors find the multiple cancers to run less than one per cent of all malignant cases, while others find as high as over four per cent. In general, with due regard to the material utilized, about three per cent of all cases of cancer show more than one malignant tumor

Whether this percentage is higher or lower than that of chance is, of course, of real importance as indicating whether the person with one tumor is more than normally likely to have a second, that is, unusually susceptible to the disease, or is less than normally likely to develop a second cancer, that is, abnormally resistant to the disease

To calculate accurately the occurrence of multiple cancer on the basis of chance alone is extraordinarily difficult, yet this must be done to establish a norm. Such a norm has been established, though not with complete accuracy. Multiple cancers are found on the basis of this calculated norm to occur about three times as frequently as they would be expected to on the basis of chance alone, allowing for a large number of corrections. It may be definitely concluded, therefore, that there is some predisposition

Grim Reaper has signalled his coming, but nevertheless there are still many things and people worth talking and reading about and many, many memories to recall and recount.

And so we leave him — among his friends and his flowers — (on his eightvfourth birthday so many were sent that he ordered them distributed through all the wards of the hospital) and his marvelous memories memories of a long life wholly devoted to service for his fellow man, and influential beyond that of all others

ANONYMOUS

FREE LUNG DEFLATION TREATMENT

The Central New England Sanatorium, Inc.,
and Industrial Colony
Rutland, Massachusetts

May 1, 1934

Dear Mr Editor

We wish to call attention to the physicians of New England that we can accept their cases of early tuberculosis of the lung for deflation treatment without cost of any kind to the patient. We propose to keep these patients at the sanatorium for ten days or two weeks and then return them to the family physician for refills and further care. We sincerely hope that the family physician will present himself at the sanatorium where he will be given a demonstration of the technique of the operation and the technique of refills.

Application should be made to the Medical Director, Dr Bayard T Crane, Rutland Mass Tel Rutland 124

Truly yours

WALTER C BAILEY M.D., President
BAYARD T CRANE M.D. Medical Director

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The Commonwealth of Massachusetts
Department of Civil Service and Registration
Board of Registration in Medicine
State House Boston

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on the Relation of Public Health to Private Practice. Says the "Anonymous"

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The writer of this letter was the first one to discuss the paper and he was the one who objected to the Board of Health's policy of having a quarantine card removed by a nurse without hearing first from the attending physician. There was no mention on my part of pecuniary considerations. It was the self respect and the dignity of the profession I was after. I maintained that a physician is certainly more qualified to judge than a nurse when his measles scarlet fever, or any other reportable case is ready for discharge. The nurse's function was always considered to carry out the physician's orders, but never to make diagnoses for him.

It is not a matter of the physical removal of the quarantine card. It is the judgment as to when this removal should occur. I shall gladly grant the first one to the nurse when the second is performed by the attending physician. Until recently such was always the policy of the Boston Board of Health. Why the change now?

M J KONIKOW M.D.

Roxbury May 6, 1934

ARTICLES ACCEPTED BY THE AMERICAN MEDICAL ASSOCIATION COUNCIL ON PHARMACY AND CHEMISTRY

535 North Dearborn Street, Chicago III,
April 30 1934

Managing Editor

The New England Journal of Medicine,

In addition to the articles enumerated in our letter of March 31 the following have been accepted

Cheplin Biological Laboratories Inc

Ampule Solution Procaine Hydrochloride 2 Per Cent 1 cc

Ampule Solution Procaine and Epinephrine, 3 cc.
Ampules Bismuth Subsalicylate 2 Grains (0.13 Gm) in Oil, 1 cc.

Ampules Solution Mercury Succinimide 1/6 Grain (0.01 Gm), 1 cc

Lederle Laboratories

Refined Diphtheria Toxoid (Alum Precipitated)

Schering & Glatz Inc

Urotropin

Urotropin Tablets, 5 grains (0.3 Gm)

Urotropin Tablets 7½ grains (0.5 Gm)

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He was adored by all of us and we are grateful for his long and useful life.

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ARTHUR W. ALLEN, M.D.,
Class of 1913

264 Beacon Street, Boston

WILLIAM HENRY WELCH

1915—Baltimore. The laboratory, Johns Hopkins Hospital, the weekly clinical pathological conference. Around the central table "pipe stand" seats are crowded with clinical clerks, interns, assistants

from all departments of the hospital. In chairs on the floor are department heads — Halsted, Kelly, Howland, Thayer, Barker, Meyer and among them benign, alert, genial "Popsy" Welch, bright of eye, pointed of beard and rotund of abdomen.

The history of the patient is presented by the intern, a case of cirrhosis of the liver with jaundice. The description of the autopsy follows by the resident pathologist. Organs are demonstrated and microscopic slides shown on the screen. The case is discussed in general and then follows a summary by Dr. Welch in his judicial, crystal clear words, interspersed with many remarks concerning the etiology of liver disease. The various recent important articles on the subject, quoting both writer and journal, and something of the history of the development of the most plausible explanation of jaundice.

Or again, it is a beautiful spring evening and the Pi Theta Phi Club (a student society) is having its annual party on board the "Kitty Knight," a disreputable but long lived and famous Chesapeake Bay steamboat. Students are everywhere, and also a goodly sprinkling of faculty, among them "Popsy." Supper consists mostly of "Wienies" and beer, dispensed by the ubiquitous Louis Hanselmann.

Soon everyone crowds forward to the cabin to get seats for the play. Dr. Welch has but recently returned from a trip to China and Japan, made with Dr. Flexner, in the interest of medical education in the East, and the title of the play this year is "Popsy in the Orient." The cast is wholly in Chinese costume and the antics of the two students who impersonate Dr. Welch and Dr. Flexner, so humorous and in spots so lacking in reserve that the show "brought down the house." At its finish Dr. Welch in his so characteristic, dry humor made a few congratulatory remarks, coyly disclaiming for his friend Dr. Flexner and for himself any such actions while away, as had been suggested by the skit.

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APPLICATION FOR MEMBERSHIP

All male Fellows of the American Medical Association are eligible and cordially invited to become members of the A. M. G. A. Write the Executive Secretary, Bill Burns, 4421 Woodward Avenue, Detroit, for an application blank. Participants in the A. M. G. A. tournament are required to furnish their home club handicap signed by the secretary. No handicap over 25 is allowed, except in the Kickers. No trophy is awarded a Fellow who is absent from the annual dinner.

The twentieth tournament of the American Medical Golfing Association promises to be a happy affair, attended by some two hundred medical golfers from all parts of the United States.

REPORTS AND NOTICES OF MEETINGS

THE WILLIAM HARVEY SOCIETY

The William Harvey Society met in the Auditorium of the Beth Israel Hospital on April 13. Dr. Albert A. Epstein of New York City spoke on the "Disease of the Kidney in General Practice."

Dr. Epstein limited himself to a few of the more important processes that take place in kidney disease. He pointed out that the pathologist has helped to confuse the subject by describing the end products, while we are really interested in the processes by which these end results in the kidneys are obtained.

The question of albuminuria is an important one, though poorly understood. Albumin in the urine includes a variety of protein substances. The presence of these substances in the urine does not necessarily mean kidney disease, for example, it is normal to have an albuminuria after cold baths during or after severe exercise, and in students at examination time. Albumin, in these cases, represents the passage of protein from the blood as a result of circulatory disturbances. Orthostatic albuminuria, certain cases of severe lordosis or any of various causes of such lordosis may be the cause of albumin appearing in the normal urine. None of these conditions represent kidney disease, nor do they lead to kidney disease.

The presence of red blood cells, white blood cells and casts are of much more significance, though even they may not represent kidney disease since they may arise from other parts of the urinary tract, as is the case with numerous calcium oxalate crystals which traumatize the ureters and cause an inflammation together with a mechanical effect on the tubules.

The clinical condition known as nephrosis presents a urinary picture in which there is the passage of varying amounts of albumin. This loss of protein may amount to as much as one or two ounces of albumin a day. The normal plasma protein varies from six to eight and one-half Gm per cent and this figure may be lowered to two Gm

per cent in a long-continued albuminuria. The repeated withdrawal of ascitic fluid will lead to the same low plasma protein content.

The first important clinical effect of such albuminuria is edema. This is caused by the fact that the osmotic pressure of the protein of the plasma has been so reduced that the blood pressure forces an abnormal amount of fluid into the tissue spaces. The fluid balance in the tissue spaces is upset in this manner whenever the protein falls below five Gm per cent, and the normal osmotic pressure which tends to hold the fluids in the vessels is no longer great enough to carry out its task. Furthermore, there is a reversal of the normal two-to-one albumin globulin ratio. This is because the albumin molecule is smaller than the globulin and passes through the kidney more easily, but the destruction of the tissue protoplasm also contributes considerably to this increase in globulin.

In albuminuria fats are mobilized in the blood and represent the lipoids that are closely associated with the cells that break down in the general tissue disintegration—a disintegration that is caused by the edema and poor nutrition of the body cells. Another effect of albuminuria is that it causes, through the undernutrition of the cells, a fall in the B.M.R. which in turn causes changes in the thyroid suggesting an exhaustion.

In these cases of heavy albumin loss where the entire clinical picture is due to the effects of this loss, the institution of the proper treatment will bring about a cure unless infection sets in. Such treatment takes from six months to four years and consists in replacing the deficit of protein by a heavy protein diet as well as the use of large doses of thyroid, up to 60 grains a day, in order to facilitate the use of the protein. The lipid content of the blood is used as an index of how far the thyroid treatment can be carried since the overactivity of the thyroid causes a proportional decrease in blood lipids.

THE NEW ENGLAND ROENTGEN RAY SOCIETY

The New England Roentgen Ray Society held its meeting on Friday April 20, 1934, at 8:15 P.M. in the auditorium of the Beth Israel Hospital. Dr. Samuel A. Robins presided.

The first paper presented was by Dr. David Davis, who spoke on "Roentgenological Changes in the Heart after Total Thyroidectomy." The changes in the heart picture following total thyroidectomy depend in part on the condition of the heart before operation. A few patients with cardiac decompensation before operation have shown a decrease in the size of the heart shadow. Some have shown no change, probably due to a balancing of the effect of thyroidectomy with the improvement in the condition of the heart. Ordinarily, there is a slight increase in the size of the heart shadow after operation, this increase comes soon after the operation.

Ucoline Products Company

Ucoline Calcium Phosphate Cocoa Wafers

Yours very truly,

PAUL NICHOLAS LEECH, *Secretary*,

Council on Pharmacy and Chemistry

RECENT DEATHS

CUSHING—HAYWARD WARREN CUSHING, M.D., of 70 Commonwealth Avenue, Boston, died at his home, May 9, 1934. He was born in Boston in 1854, the son of Hayward and Harriett (Pierce) Cushing. He was fitted for college at the Boston Latin School, and graduated from Harvard College in 1877 and the Harvard Medical School in 1882. He studied later in England, Germany, and Austria. After returning to Boston he served on the staffs of the Boston Dispensary, the Carney Hospital, and later as surgeon to outpatients, and visiting surgeon to the Boston City Hospital. After concluding active service at the last named institution, he was given the title of consulting surgeon. He withdrew from active practice to a large extent in 1905 due to ill health.

He joined the Massachusetts Medical Society in 1881, and was a Fellow of the American Medical Association, a member of the Société Internationale de Chirurgie, the American College of Surgery, the Boston Surgical Society, the Boston Society for Medical Improvement, the American Society for the Advancement of Science, and the Boston Society of Medical Sciences. He held membership in the Harvard Club, the Tavern Club, and the Oakley Country Club.

He is survived by his widow Mrs. Martha (Thompson) Cushing, and two daughters, Mrs. Helen C. Bird of Norwell, and Mrs. Elizabeth C. Carleton of Cambridge.

SCRIBNER—JAMES MERLE SCRIBNER, M.D., of 11 Kilgore Avenue, West Medford, formerly of Lowell, Massachusetts, died at his home, May 11, 1934. He was born in 1902, the son of Mr. and Mrs. Charles E. T. Scribner. His early education was acquired in the public schools of North Adams and Medford.

He engaged in premedical subjects at Tufts College and later graduated in Medicine from Tufts College Medical School in 1927 where he was president of the Phi Chi Fraternity. His internship was at the Lowell Corporation Hospital, and he later served as resident physician and superintendent. After the name of the hospital was changed to St. Joseph's he served as chief of the obstetrical service. He joined the Massachusetts Medical Society in 1927, and was a Fellow of the American Medical Association. He was a junior member of the American College of Surgeons and was affiliated with the Masons and Elks. He is survived by his parents and two brothers, Dr. Edwin M. Scribner and Charles E. Scribner.

SLATE—AMES WILSWORTH SLATE, M.D., of 74 Oak Street, Indian Orchard (Lndlow), died at his home, May 11, 1934. He graduated from the Harvard Medical School in 1900.

NOTICE

AMERICAN MEDICAL GOLFING ASSOCIATION

The American Medical Golfing Association will hold its twentieth annual tournament at the Mayfield Country Club in Cleveland on Monday, June 11, 1934.

Thirty six holes of golf will be played in competition for the fifty trophies and prizes in the eight events. The trophies include the Association Championship for thirty six holes, gross, the Association Handicap Championship for thirty six holes net, the Choice Score Handicap Championship for thirty six holes gross, the low gross Eighteen Hole Championship, the low net Eighteen Hole Handicap Championship, the Maturity Event limited to Fifties over 60 years of age, the Oldguard Championship limited to competition of past presidents, and the Kickers' Handicap. Other events and prizes will be announced at the first tee.

Dr. Homer K. Nicoll of Chicago is president and Dr. Charles Lukens of Toledo and Dr. John W. Powers of Milwaukee are vice presidents of the American Medical Golfing Association, which was organized in 1915, by Dr. Will Walter, Dr. Wendell Phillips and Dr. Gene Lewis, and now totals 1,100 members representing every state in the union. The living past presidents include Dr. Wendell Phillips of New York, Dr. Thomas H. Hubbard of Toledo, Dr. Fred Bailey of St. Louis, Dr. Edward Martin of Philadelphia, Dr. Robert Moss of San Antonio, Dr. Carlton Wallace of New York, Dr. Will Walter of Chicago and Charlottesville, Va., Dr. James Eaves of San Francisco, Dr. Chester Brown of Danbury, Conn., Dr. Samuel Childs of Denver, Dr. W. D. Sheldon of Rochester, Minn., Dr. Walter Schaller of San Francisco, Dr. Edwin Zabriske of New York, Dr. Frank Kelly of Detroit and Dr. John Welsh Croskey, Philadelphia.

CLEVELAND COMMITTEE

The Cleveland Committee is under the chairmanship of Dr. John B. Morgan, 1301 Medical Arts Building, Cleveland, Ohio. He will be assisted by Drs. R. H. Birge, A. V. Boysen, E. F. Freedman, F. T. Gallagher, Secord Large, E. P. McNamee, J. J. Marek, Theodore Miller, U. V. Portman and M. A. Thomas.

The Mayfield Country Club of Cleveland is described by Chairman Morgan as 'probably the finest course in the district, and certainly one of the most interesting. Many championships have been held on this course and I am sure the visiting doctors will be delighted with it in every sense of the word. It has a most beautiful club house, and we can promise a merry nineteenth hole and a dinner fit for a champion.'

term of secretary treasurer, recently made vacant through the decease of Mr George T Lennon who had served faithfully for many years

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coincident with the lowered metabolic rate Dr Davis reported fifteen patients with congestive heart failure in whom total thyroidectomy was followed by an increase in the heart shadow size and by clinical improvement. The myxedema heart was briefly discussed.

A paper on "Protracted Irradiation in Carcinoma of the Larynx" was presented by Dr Harry F. Friedman. He reported his results in the treatment of five cases of carcinoma of the larynx and pointed out that the intensity of irradiation in this disease should be influenced by the amount of calcification that is present in the laryngeal cartilages. Papillary types of carcinomata require the largest doses. The speaker showed slides demonstrating the site of irradiation and the subsequent skin reaction. He demonstrated two patients treated by x-ray with encouraging result. One patient has gone fourteen months without recurrence. Dr Friedman described another of his patients who was irradiated every day from 9 A.M. to 5 P.M. for thirty-five days. Aphonia follows the treatment with gradual improvement. Tracheotomy has occasionally been necessary because of the reaction. There is little discomfort from the skin reactions with no apparent untoward effects upon the thyroid gland.

Dr William S. Altman presented an interesting paper on "The Value of Lateral Views of the Rectum." It has been found from experience that the left lateral view gives the best results. The plates are best taken immediately after the sigmoid is filled and before the entire colon is filled, because loops of the latter may easily obscure lesions in the former. Dr Altman showed lantern slides demonstrating lesions in the sigmoid on the lateral view which had been entirely concealed in A.P. or P.A. views. Lateral views have proved useful in the demonstration and diagnosis of lesions of the descending colon.

The subject of "Roentgenological Explorations of the Biliary Ducts with Lipiodol" was discussed by Dr Louis Hermanson. The procedure has been reported only once by an observer in Argentina, and attempts are now being made at the Beth Israel Hospital to make it of practical use. Lipiodol is injected into the biliary ducts at the time of operation by means of a 14 gauge needle in quantities of 15 to 20 cc. There is no necessary modification of the operative procedure except that the drapes are sewed on rather than clipped. The picture thereby obtained is of considerable value to determine whether the common duct is to be explored, at least in the doubtful cases. X-rays may be taken at any desired interval after the operation as check ups.

Dr Leopold Brodny presented an interesting paper on Urethrography and illustrated it by means of lantern slides. Urethrography has been neglected largely because the urethra is so readily accessible to the urethroscope. The work started with Dr Cunningham in Boston in 1910 but the posterior urethra was not demonstrated by urethrography

until 1921. Any iodized oil may be used for the injection. After about 20 cc of the fluid has been injected, the x-ray film is exposed, but care has to be taken that the fluid continues to be injected. If the injection is stopped at the time the exposure is made, the posterior urethra shuts down and will not appear in the film. The position of the patient is important for good pictures. Lantern slides showing urethrograms in the presence of prostatic hypertrophy were projected on the screen. The splitting of the stream of injected material in the posterior urethra with hypertrophy of the middle lobe of the prostate was very clearly demonstrated. Urethrograms in patients with tabetic bladders show a characteristically funnel-shaped posterior urethra. The condition of the urethra after prostatectomy was illustrated. It was apparent that good functional results are not dependent exclusively on anatomical restoration. The internal sphincter is not essential for urinary continence. Urethrograms in the female were also demonstrated, showing anatomical variations, a case with a small diverticulum of the urethra, and a case with hypertrophy of the internal sphincter. The effect of straining on the position of bladder and urethra relative to the pelvis in cases with cystocele was shown very adequately by means of urethrograms.

The final paper was presented by Dr Samuel A. Robins who spoke on "Cystography and the Prostate." Cystography was first used at the beginning of this century and shortly thereafter attempts were made at demonstrating enlargements of the prostate by injection of air into the bladder. Solutions of the halogens were first used in 1919 in 25 per cent solutions. In his experience, Dr Robins has used 3 per cent solutions very satisfactorily. Various affections of the bladder were shown by means of lantern slides including hypertrophy, sacculation, pouching, and elevation of the base of the bladder. The characteristic "derby-shaped" appearance of the bladder with elevated base due to prostatic hypertrophy and obstruction was illustrated by numerous examples. Distinct trabeculation was shown in some of the slides presented, as well as small defects from hypertrophy of the median bar of the prostate and defects from the small fibrotic prostate. Dr Robins pointed out that by cystography it is impossible to make a diagnosis of carcinoma of the prostate.

Each of the papers was followed by a very brief discussion.

MASSACHUSETTS ASSOCIATION OF BOARDS OF HEALTH

The Massachusetts Association of Boards of Health met on May 3 at the University Club, Boston.

Dr Henry D. Chadwick, Commissioner of the State Department of Public Health, was elected to membership on the Executive Committee. Mr. Donald G. Buckner was elected to fill the unexpired

term of secretary-treasurer, recently made vacant through the decease of Mr George T Lennon who had served faithfully for many years

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MASSACHUSETTS SOCIETY OF
EXAMINING PHYSICIANS

ANNUAL MEETING

The Copley Plaza, Wednesday, May 23, 1934

Business Meeting 6 30 P M

Dinner at 7 P M sharp \$2.50 per plate

Election of Officers

Speakers

1. Dr. Joel E. Goldthwait, "Chronic Invalidism due to Joint Pathology"

2. Dr. Howard Thompson, "Medical Aspects of the Subject."

3. Dr. Carl Watson, "The Subject from the Osteopathic Point of View"

CADIS PHIPPS, M.D., *President*WM. PEARCE COUES, M.D., *Secretary*

AMERICAN PSYCHIATRIC ASSOCIATION

The ninetieth annual meeting of the American Psychiatric Association will be held at the Hotel Waldorf Astoria, New York City, May 28, 29, 30, 31, and June 1, 1934.

The program which includes addresses by eminent psychiatrists representing the several sections of the country is of especial interest.

There will be a scientific exhibit, motion pictures of hospital activities, and a commercial exhibit. Special rates are allowed by railroads. To secure these reduced rates, those who attend should obtain a certificate (not a receipt) for each ticket. One-way ticket should be bought to New York and on presentation of the certificate at headquarters registration the return ticket can be purchased at one third fare.

SOCIETY MEETINGS, CONGRESSES
AND CONFERENCES

May 18—The New England Roentgen Ray Society will meet at the Boston Art Club, Boston, at 8 P.M. The Annual Dinner will be held at the Boston Art Club at 6 45 P.M.

May 19—The New England Pediatric Society will meet at New Haven Conn. at 2 30 D.S.T. Information may be obtained from the Secretary, Dr. Gerald Hoeftel, 319 Longwood Avenue, Boston.

May 21, 24, 25—New England Heart Association. See page 1041, issue of May 10.

May 23—Massachusetts Society of Examining Physicians. See notice above.

May 23—The Carney Hospital Clinical Meeting. See page 1093.

May 26, 27, 28, and 29—The American Association on Mental Deficiency. Details may be obtained from the Secretary, Dr. Groves B. Smith, Godfrey, Illinois.

May 28, June 1—American Psychiatric Association. See notice above.

June 7—Faulkner Hospital Clinical Meeting. See page 1093.

June 7, 8, 9—Annual Meeting of the American Association for the Study of Gout will be held in Cleveland, Ohio. For details of the program apply to Dr. J. R. Yung, Terre Haute, Ind.

June 11—American Medical Golfing Association. See page 1090.

June 12—American Heart Association will meet at 9 30 A.M. at the Cleveland Hotel, Cleveland, Ohio.

July 24-31—The IVth International Congress of Radiology will be held in Zurich under the presidency of Professor H. R. Schnitz. General Secretary, Dr. H. E. Walther, Gloriastrasse 14, Zurich.

August 18 - September 30—Medical Study Trip to Hungary. See page 975, issue of May 10.

September 3-6—American Public Health Association at Pasadena, California. Dr. J. D. Dunshee, Chairman, Local Committee on Arrangements.

September 4, 5, 6—International Union Against Tuberculosis. For information address the National Tuberculosis Association, 450 Seventh Avenue, New York City.

BOOKS RECEIVED FOR REVIEW

Traité de Physiologie Normale et Pathologique
Tome V Respiration. Par M. M. Léon Binet, et al.
474 pp. Paris: Masson et Cie. 80 fr.

The Clinical Management of Horseshoe Kidney
By Robert Gutierrez. 143 pp. New York: Paul B. Hoeber, Inc. \$3.00.

International Clinics. Volume I. Forty Fourth Series, 1934. Edited by Louis Hamman. 320 pp. Philadelphia: J. B. Lippincott Company.

Transactions of the American Gynecological Society. Volume 58, for the year 1933. Edited by Otto H. Schwarz. 318 pp. St. Louis: C. V. Mosby Company.

The Deserted Village. No. 2. 63 pp. New York: The Chemical Foundation.

Chinese Medicine. By William R. Morse. 135 pp. New York: Paul B. Hoeber, Inc. \$2.50.

Allergy in General Practice. By Samuel M. Feinberg. 339 pp. Philadelphia: Lea & Febiger. \$4.50.

Manometric Methods as Applied to the Measurement of Cell Respiration and Other Processes. By Malcolm Dixon. 122 pp. New York: The Macmillan Company. \$1.75.

13 Jahre Wissenschaftlicher Medizin im Nord Kaukasus 1920-1933. Edited by I. L. Benkowski. 244 pp. Rostow am Don: Verlag "Sewerny Kawkas".

Aids to Qualitative Inorganic Analysis. By R. G. Austin. Students Aids Series. 204 pp. Baltimore: William Wood and Company. \$1.50.

Aids to Pathological Technique. By David H. Haler. Students Aids Series. 187 pp. Baltimore: William Wood and Company. \$1.50.

The Pocket Anatomy. By C. H. Fagge. Ninth Edition. Students Aids Series. 333 pp. Baltimore: William Wood and Company. \$2.00.

The Harvey Lectures. Delivered under the auspices of the Harvey Society of New York 1932-1933. Series XXVIII. 233 pp. Baltimore: The Williams & Wilkins Company.

BOOK REVIEW

Aids to Neurology. By E. A. Blake Pritchard. 376 pp. Baltimore: William Wood and Company. \$2.00.

This is a students' review book, well written and accurately describing the main signs and symptoms of nervous diseases. It should be useful as a brief summary of the subject to both the student and the practitioner.

The New England Journal of Medicine

VOLUME 210

MAY 24, 1934

NUMBER 21

NEW ENGLAND SURGICAL SOCIETY

NOTES ON GIANT-CELL TUMORS OF BONE AND CYSTS*

BY FREDERIC J. COTTON, M.D.†

IT is not my purpose here to do more than give the gross results of observation in this class of cases and some detail only in regard to individual cases that seem to me significant. The title is chosen because there present themselves to us a rather large proportion of cases that seem, offhand, to be giant-cell tumors. Careful study of history, physical findings and x-rays will give us a rough reclassification into typical and atypical cases, but, at least in the latter group, there are many errors. Therefore typical and atypical tumors and cysts (and the mistakes) will be considered together as a *clinical* grouping, not as if always related histologically at all.

The typical giant-cell tumor is familiar enough and perhaps some of us have swung too far in complacency as to the benign character of the growth. Sometimes we are reminded that the border-line of malignancy is a narrow one and that we really know but little about these growths. This type tumor is without significant history as to origin or course of the trouble until it is called to attention by a fracture through it. Typically these are infractions, cracks or crumplings only not in themselves important. In gross there is expansion of the bone in diameter, with a blunting of outlines notable if it is near the joint end of a shaft bone. There is no characteristic heat or vessel dilatation or change of color. Soft parts are not infiltrated. There is no tenderness unless there has been a trauma.

By x-ray we find a wide area of transparency, that is, bone loss definitely limited in area but usually without any dense surrounding layer. The area of absorption looks as if it had progressed, not from the centre outward as with osteogenetic sarcoma, more or less globular or oval, but as if it had pushed its way into the corners of the cancellated bone. Typically the area of defect is more or less traversed by trabeculations. This is not a reliable differentiation, diagnostically, against cyst, either way. Growth causes absorption of the cortex, sometimes entire. Protrusion through the periosteum or into a joint is not part of the type picture.

Exact x-ray diagnosis is only at times possible, but the common confusion is as between cyst and tumor. We may say with some confidence that we have a sarcoma or myeloma, or that we are dealing with *either giant-cell tumor or cyst*. We are not always certain, or always right.

Much has been made of the location, more than the facts seem to warrant.

Typically giant-cell tumors belong to shaft ends (not epiphyses) of the tibia or femur at the knee or the humerus high up, or the radius at the wrist, while cysts, at least of the "solitary cyst" type occur more away from the bone ends. In practice either may occur anywhere. We have cases of giant-cell tumor of radial and humerus midshaft.

In this small series are giant-cell tumors of the jaw of the scaphoid of the foot of a metatarsal, two of the phalanges of the hand, two metacarpal tumors, one case of a patella, one probable vertebral involvement*.

Tumors of the jaw, not in bone (epulis) are recognized, and in our series there are apparently typical tumors, without primary bone origin, in the pulp of a finger tip, at the end of a toe, in the capsule of an ankle joint. Apparently they may be anywhere save in the ribs and the skull.

On the other hand cysts in our series occurred in or close to the head of the femur in four cases, close to the knee in one, close to the tibial head in three, at the ankle in one close to the shoulder in two, once in a metacarpal and once in the pelvis. On the other hand, eight were shaft cysts. So the line is far from sharp.

Histologically the giant-cell tumor is a granulation tissue, a fibroblast mass studded with "foreign body" giant-cells (Mallory), vascular, without considerable mitoses. It is sharply different from the malignant type with "tumor" giant-cells. Mallory has a type case of this sort, a giant-cell growth, but with every histologic sign of malignancy. Broadly speaking, it is true that the tumor characterized by giant-cells of the "foreign-body type" (as Mallory has long called them) scattered thickly in the mass of fibroblast granulation, is in the vast

*Read at the Annual Meeting of the New England Surgical Society September 30, 1933 at Boston.

†Cotton, Frederic Jay—Consulting Surgeon, Boston City Hospital. For record and address of author see "This Week's Issue" page 1131.

*Lewis Dean. Primary giant cell tumors of the vertebrae. J. A. M. A. 83:1224 (Oct. 18) 1924.

majority of cases benign Changes in tumor character are vastly rare, so rare that I think there is some doubt in the matter There have been a few cases of death, with metastases

One case can only be called malignant, but the impression gained in seeing it was of presumably embolic metastases in the lung, not generalizing, of unchanged histological character

Another, Case II, F F, died

CASE I, M—n

A girl of nineteen in 1925 after slight injury developed a tumor of the radius at the wrist which by March, 1926 became disabling Operated March 27, 1926 at the Massachusetts General Hospital Recurrence after two months Xray treatment, intensive but with no results Seen by me Dec 7, 1926 with a much expanded bone Skiagraph typical Operated on by me, Feb 14, 1927 Type tumor No cystic degeneration Cured and packed Healed quickly

Pathological report by Mallory of a typical "chronic inflammation with foreign body giant-cells Healing and partial bone repair"

Reoperated in July, 1927 for recurrence in region of the radial styloid

The pathological report was again of the typical tumor After this there was healing and at least no definite recurrence locally Early in December, 1927 she developed a cough and on Jan 3, 1928 there showed characteristic metastatic nodules in the lungs increasing rapidly in size to May, 1928 Then a quiescence of growth and symptoms but after xray treatment she grew worse and died in October 1928, three years after the recognition of the tumor I am afraid the xrays here did only harm

CASE II F F, Baddek Nova Scotia woman of 59, seen Jan 18 1930 In December, 1928 she had an epulis of upper jaw removed which was called a "sarcoma" and treated afterward with radium Examination showed tumors of the ulna at the right wrist, left patella and left lower jaw Curettage and the usual vaseline pack. All tumors removed were diagnosed as type giant cell growth by Mallory

All wounds healed there were no recurrences but a fresh tumor appeared in the right radius at the wrist doubtful when she was first sent home, rapidly growing a month later and operated in February, 1930 Tumors developed in the knuckles A third operative series was done in May, 1930 With in five months there was a spontaneous fracture of one tibia and a humerus broke as she fell

Tumors developed in both hands in the tarsus on one side in a fibula and in an ulnar shaft in hips etc Some of the growths were operated on in Nova Scotia She died Oct 11 1931 There had been an incredible number of growths a number of fractures Viosterol was used

In October 1930 I wrote Dr McMillan my conviction that this case belonged in the class of v Recklinghausens osteitis fibrosa cystica

In 1930 I knew nothing useful about the parathyroid relation to the condition

The first report is cited above The second operation brought a report from F B Mallory The picture was consistent with so-called 'benign giant cell tumor of bone'

Pathological report after the third operation from T Leary reads 'Benign giant-cell tumors of first right metacarpal, right ring finger and left hand'

One case showed clinically a queer type of recurrence late and fast with a histological pic-

ture suggesting a station on the border-line of malignancy

CASE III, M Q, a woman of 46 seen November 19, 1931 right knee lame for a month Tumor of the outer part of the head of the tibia seen by xray with slight infraction of the cortical layer but no trabeculations It looked like a cyst Operated on November 25, 1931 and it proved to be a tumor, which was cleaned out and packed in the usual way

Pathological Report "Two types of reaction. In one area the tissue is composed solely of newly growing fibroblasts growing without any characteristic arrangement" The other area a typical "giant cell" tumor No mitoses

Diagnosis Giant cell tumor, granulation tissue. (J Stewart Rooney)

She healed quickly, became active and well save for a developing high blood pressure which was successfully reduced

In August, 1933 a routine check xray showed a quick recurrence this two years after the first operation, and without warning symptoms

Operation August 15, 1933 showed the tumor to be seemingly a typical giant-cell but unusually vascular and like a myeloma The tumor was larger than at the first operation It was treated as usual and has done well, but the microscopic picture, giant cell again showed more mitotic figures than one likes Xray treatment promptly Judgment reserved

May 17 1934, no further recurrence

There are two cases recurring persistently that raise a suspicion of malignancy

CASE IV, L F, a colored man, aged 40 was admitted to the Hospital Sept 5 1928 Says he struck his wrist against a door three months ago Swelling appeared which grew rapidly

Examination shows the tumor at the lower end of the radius, typical except that it is tender

Xray showed a typical giant-cell for the lower two inches, extending close to the joint. There was a good deal of expansion

Operated on September 11, 1928 Typical tumor except for some tumor tissue externally, apparently oozed out through a small fracture line Usual routine

Pathological report of type tumor Cleaned up well but had a recurrence after about a year

Entered another service with a pretty large tumor at the wrist in April, 1930 and for some reason amputation was advised and done but the pathological report read Foreign body giant cells Blood pigment. Chronic inflammation new bone formation Picture consistent with so-called giant cell tumor (Mallory)

CASE V Case of Dr Hepburn's at the Boston City Hospital

Almost similar to the above, a giant cell tumor of the tibia high in a woman of 40 which recurred after seven years, but then reappeared within two months The leg was amputated in January, 1933 No recurrence as yet up to August, 1933 A giant cell tumor, no sign of malignancy histologically

These cases seem in no sense to be malignant as the term is used Recurrence may mean inefficient surgery

CASE VI H F

In 1920 at about six years of age had an abscess of the cheek. Six months later there was painless swelling of the jaw Seen a year later showed enlargement of the lower jaw from above the angle forward to the bicusplids

Operated by curetting and packing under the old technique It took nine months to heal

Two years later operated for recurrence It healed in two months

These were typical giant cell growths and so reported microscopically

An operation for scar keloid in 1924

Examined in May, 1933 No recurrence no deformity, almost invisible scar

In this case the operation was extensive and difficult and it obviously took two tries to get it all

No other cases have recurred, though one other was mistakenly opened up for what proved only a cyst-like pocket

CASE VII U a woman about 22 Tumor of the radius at the wrist. Operated as usual, healed but did not shrink down and xray was doubtful after three months Operated on no tumor found Went on to perfect healing No recurrence for two years at least. This was an unnecessary operation

There are not uncommon seeming transition forms, on the way from tumor to cyst

A notable example, already recorded, shows this very definitely

CASE VIII P S

Boy of five years Operated at the old Beth Israel Hospital for osteomyelitis It was not osteomyelitis and the pathological report from the Harvard Medical School was 'giant cell sarcoma malignant' which also it was not

Seen by me July 24 1929 then eleven years old History of slowly developing bowing and shortening of the right leg Then two inches short with upper end of tibia much broadened

Xray showed apparent multiple cysts and deformity of the epiphyseal line

Operation July 29, 1924

Three separate cysts occupying the whole head of the tibia close to the epiphysis No sign of any lining It was made into one cavity cleaned and filled with Horsley bone wax and closed

Prompt recovery with no recurrence

Oct 6 1924 it showed repair with absorption of the wax beginning

Kept track of to July 10 1929 at which time the transparent area (bone wax) showed in the xray as about half the mass put in

The epiphyseal line was more nearly flat and normal

Damage to the epiphyseal line may be chargeable to tumor involvement, quite as likely resulting from the first operation however

This case brings up definitely George Barrie's contention of years ago that giant-cell tumors were an "Hemorrhagic osteomyelitis"* forming the pseudo tumor, retrograding to the cyst

It is certain at least that the tumor may be the forerunner of the cyst and one sees occasional transition cases mostly cyst with giant cells in the organized more fibrosed wall or a fibrous lining to a cyst from which the giant-cells have disappeared

CASE IX M C. girl of 13 Operated on December 3 1932 No history till the bone broke with very slight trauma Tumor was at the distal end of the second metatarsal which was much expanded and broken across

Barrie George Multiple hemorrhagic foci in bone Ann. Surg. 1 551 (May) 1920

Usual operation save that the wound was closed over blood clot and not packed Traction to toe applied to maintain the shape of the bone Ideal result up to Sept 10 1933

Pathological Report

Sections show one portion of the cyst wall to be composed of fibrous tissue Other portions of the tissue are composed of cells apparently derived from fibroblasts, these cells growing in an irregular manner and numerous giant-cells are seen An occasional mitotic figure is also seen Diagnosis Giant-cell tumor of bone (J Stewart Rooney) In gross this was a cyst with 'tumor' lining or granulation lined cysts with considerable soft tissue which do not show characteristic giant cells in the mass

CASE X H

Aged five and a half years Operated at Beth Israel Hospital Jan 13 1931 Spontaneous fracture of the humerus Diagnosis from xray of giant cell tumor

Operation showed a cyst, with tissue lining Treated as usual and treated promptly

A residual cyst was opened up a year later, Jan 7 1932 and healed No recurrences to date

Microscopic examination showed no giant-cell tumor only chronic inflammation with new bone formation (M J Schlesinger)

Obviously the eighteen days old repair of the fracture overlaid any tumor pathology there may have been

CASE XI, T R of Waterville Maine boy of 16 Broke both bones of leg four weeks ago just below knee Pathology underlying the break not noted Seen Dec. 15 1931 Xray showed an oddly elongated atypical cyst Diagnosis of cyst tentative (Dr Paul Butler)

Operation Dec 17 1931 showed cyst with much tissue lining which was cleared packed healed and repaired Last year the boy ran the mile for his school

Pathological report showed repair changes chargeable to the fracture and besides this giant cells are seen and it is difficult to determine whether they are the giant cells characteristic of so-called giant cell tumor or whether they are the giant cells seen in cases of repair A very rare mitotic figure can be seen

Diagnosis Granulation tissue giant cell repair bone cyst (giant cell tumor) (J Stewart Rooney)

Examined in April 1934 No sign of recurrence

Of possible meaning is the internal pressure found in some cysts with minimal fibroblast cyst lining This tension is not easily understood

It is odd that just one of these cases is the only cyst that recurred

CASE XII D W Male Aged 40 Seen July 25 1928

Sudden onset of pain in hip ten days before severe increasing

Temperature 100 degrees Markedly sensitive hip Some muscle spasm Intensely painful Xray showed cyst in neck of femur Unusual pain and temperature suggested a side diagnosis of Brodie's abscess

Operation Faulkner Hospital July 28 1928 On cutting down to the bone fluid was extruded under pressure from tiny orifices in the thinned cortex. Cyst cleaned out and packed as usual with vaseline Healed promptly and did not recur for the two years he was followed Xray Oct 10 1928 showed rapid bone repair The pathological report reads Cyst containing cholesterol crystals with a wall of connective tissue containing blood pigment (F B Mallory)

CASE XIII, C H., girl of 13 Admitted May 22, 1928 Six weeks history of swelling below the knee "size of hen's egg" X ray diagnosis bone cyst of upper tibia Other bones show no changes

Operation May 24, 1928

Cavity opened and wiped out Bone walls broken into the cavity and wound closed over blood clot.

Oct. 4, 1928 a second operation for recurrence beneath the repair scar, cleaned out and disinfected with carbolic and alcohol Packed with vaseline Six weeks later there was no x ray evidence of bone repair This never thoroughly healed, though it did not recur again as a cyst, and Sept. 11, 1933 she still had a small indolent sinus Pathologically it was reported as a cyst simply Unfortunately the only report found is illegible

This brings up the matter of other retrograde processes Broadly speaking, what becomes of giant-cell tumors? Some become cystic, as noted, and for all we know remain cystic without growth, indefinitely

Others, we have assumed, when released from tension by fracture, retrograde and are cured I know of no data for this assumption Certainly opening of the surrounding wall, in default of cleaning out, does not necessarily cure the trouble In cases operated on, and packed with vaseline, the inner surface quickly becomes clothed with granulations, the healing is by fibrous scar, much of which is presently calcified and reorganized into something approaching normal bone. The process is then over

We do not know whether fibrosis as such is one of the end results of giant-cell growth There are three cases in point

CASE XIV, P, man of 27 Seen April 26, 1932 Operated on twice elsewhere for giant cell tumor of the lower end of the femur The second time, bone grafts were put in Sepsis followed involving the knee and continued two years He showed no repair and on x ray, apart from results of sepsis, dead grafts and non union there was a definite ovoid mass, three inches in length apparently tumor, central in what was left of the shaft near the knee After a preliminary open drainage operation and some regaining of health a thigh amputation was done which healed in due normal course

To my great surprise there was no tumor as such The great ovoid mass of dense tissue within the bone was "fibrous tissue showing marked round cell infiltration There is no attempt on the part of this fibrous tissue to become calcified and no evidence of new bone formation can be made out. An occasional giant-cell is seen These giant cells have the appearance of foreign body giant cells" (J Stewart Rooney)

CASE XV, A. E., boy aged 12 Seen October 25, 1932 Fracture of left femur from two to four years previously (dates in history throughout are contradictory) Started to limp in the winter of 1931 Presented himself with picture of long mass of expansile growth in upper femur and a fresh infraction of bone wall Shows Froelich's syndrome with marked adiposity

Operation advised but not accepted He disappeared, reappeared five months later and was operated on as giant cell or cyst A fibrous tumor was found and enucleated He was put under traction as only a periosteal shell remained Under endocrine

and vitamin regimen he showed excellent repair and no sign of recurrence

June 23, 1933, a month after what seemed a normal repair by x ray there was evident a rapidly growing recurrence just below the site of the old mass

This was operated, enucleated and packed. He did well clinically and repair was progressing well, when he was taken to New York O. R. A. A. and it appears that he died there a few weeks ago at the Memorial Hospital apparently from the shock of an operation, the indications for which are not clear to us

The point of interest is that the first pathological examination by Dr Rooney showed a benign fibroma, as to which the question of metaplasia from a giant cell tumor was considered The second specimen showed growth and mitotic activity which not only Dr Rooney but Dr Leary and three other pathologists who reported, could interpret only as a malignant mass

We are not likely ever to have a conclusive answer in this case, only the sketch of which is here given

CASE XVI R D man of 27 Seen April 20 1927 Injury to leg July 11, 1926, in plaster for nine weeks followed by "refracture" and again in plaster for three more weeks and crutches to February Limp pain and sensitiveness of right hip

X ray showed a seemingly large cystic growth in the trochanteric portion of the femur Considerable expansion of bone with cortex thin and broken in two places one of which looks old (S. A. Robins)

Operation April 27, 1927 Proved to be not a cyst but fibroma Enucleated vaseline packed as usual Healed promptly treated in ambulatory splint for months to avoid deformity Bone repair complete by x ray Jan 7, 1930 Jan 8, 1931 x ray shows solid bone May, 1933, clinical examination shows a perfectly normal hip with full function

The pathological report was of "a fibroma of connective tissue consistency showing microscopically numerous spicules of bone about which there is a conspicuous proliferation of connective tissue" (L. W. Smith)

One case, pure myxoma histologically, so strongly suggests in history and pattern the giant-cell group that one is inclined to list it here

CASE XVII Mrs M S Taunton a woman of 26 Seen May 12 1933 with no history other than a twist of the right wrist (not severe) ten weeks ago Lameness persisted and thickening was noted X ray taken showed tumor cyst of lower end of radius Much disappearance of bone with the cortical layer thin and expanded the tumor extends pretty well into the radial styloid Called probable giant-cell but atypical in that absorption is very uniform and trabeculations are absent. The film shows a half healed infraction of the cortex

Operation May 14 1933 Faulkner Hospital Tourniquet applied Incision over outer side of radius and the dorsal branch of the radial nerve pushed aside No infiltration of tissue with tumor at the point where the infraction is evident. Tumor laid open and the cavity was filled with a "emulsi" paraffinlike material Cavity involving the whole diameter of the bone two inches long measuring up from the radial walls of the cavity with hard clean bone not infiltrated and with no tissue lining

Cleaned out mechanically swabbed with alcohol, packed with vaseline and boric strips Pressure dressing

Biopsy showed (frozen section) myomatous tissue without cell activity

Pathological Report "Sections microscopically through the tissue submitted for examination shows it to be composed of a very loose textured supporting stroma of fibrous tissue surrounding a purple staining homogenous material. The cells are fairly regular in outline and a very rare mitotic figure can be seen. The tissue is characteristic of a myxoma. This type of new growth must be treated as a potential malignancy. The spicules of bone submitted for examination present nothing unusual in their appearance.

Diagnosis Myxoma (Premalignant) (J Stewart Rooney)

May, 1934. This case is still sub judice, vibrating between Bloodgood and Boston

One case called probable giant-cell proved a myeloma

CASE XVIII, H. M., a man of 45. Seen April 24, 1928, with spontaneous fracture of the right humerus, high three days previously. X-ray showed a cystic picture on which no positive diagnosis was made. Operation May 18, 1928 showed a terrifically vascular tumor which was enucleated and packed. It was reported as a myeloma (Mallory). X-ray treatment was instituted.

Healing and repair went well and he returned to work continuing x-ray treatment with Dr Charles Whelan.

May 8, 1929 he was operated on at the Faulkner Hospital by me for a recurrence about the greater tuberosity.

Again the vascular tumor—but in spite of hemorrhage a more satisfactory enucleation and clean up was done. Again x-ray and rapid repair. There has been no return of the growth. Function is perfect. Examination Sept 27, 1933 showed no recurrence by x-ray. Skull negative.

The second pathological report was as follows:

Sections microscopically through the small pieces of tissue reveal the presence of numerous round and spindle-shaped cells which have somewhat the appearance of those found in sarcomas. A few giant-cells are also seen in the tissue. The new growth is characteristic of a myeloma.

Diagnosis Myeloma. (L W Smith)

April 1934. No recurrence as yet.

Another case, seen in consultation with Dr Leo Brett, was apparently a giant-cell tumor of a vertebral body, proved on operation to be myeloma, recurred, late, with cord symptoms, was again operated, and radiated, with apparent entire cure. Now reported free from trouble, years after the first onset.

These two cases, incidentally, are not unimportant as showing what can be done with myelomas.

In this connection may be cited a case of mine, years ago, that was operated on for a myeloma of the femur (with spontaneous fracture) and later for a large myeloma of a rib, and showed skull foci. He died five years from the onset of pneumonia from exposure in a blizzard.

Of interest also is the fact that very definite skull foci in that case, and small patches in the skull in case XVIII, H. M., remained stationary for a very long time. Probably one does not cure these cases but they certainly reward proper treatment and justify a certain optimism.

Some confusion may obtain between Brodie's abscess and cyst. The history may not help and

the containing wall of bone, the main diagnostic point, may show up in a cyst, and may be indeterminate in an abscess.

Now we come to cysts as cysts.

Those which most interest us are those probably without parathyroid antecedents, and that means essentially the solitary cysts single or complex, occurring typically in the shaft of long bones, with a picture (including bone expansion) practically exactly like the giant-cell masses, or else they are close to the joints in just the place for a giant-cell tumor, looking a good deal like it in the x-ray, though usually lacking the trabeculations and apt to show less penetration into corners of the bone.

Of our lists those that may with much reason be regarded as belonging to the giant-cell class, or at least related, number seventeen. These were all cases operated on and verified. So far as the data go, none recurred, none failed to repair save the unlucky case XII, and here infection may have been a factor.

But there are cases of cyst that one may not classify at all, as yet.

Case XIX, C

Case XXI, K.

Case XXII, Marble's case

Other cases must be classed as osteitis fibrosa cystica. No cases of Kohler's disease, or Kienboch's and the like are here included, though we must call them fibrous osteitis.

Of the cases that follow none were generalized, but five of the six showed other bones involved and the sixth an extension in the same bone.

Case XXIII, O

Case XXIV, R

Case XXV, H

Case XXVI, M

Case XXVII, L

Case XXVIII, G

Of these only the last has had proper lime and phosphorus study. She was referred to Albright's clinic, carefully studied and reported entirely negative. Two others had lime determinations, within normal limits, but this was a few years ago, with the technique of that time. Case XXVI is the only unoperated, unverified case.

There are a few cases not cystic at all—but obviously related.

Case XXIX, P

Case XXX, F

Case XXXI, W

There is one Case XXXII, S, the only one except Case II that can be called general skeletal involvement.

It is self-evident that many of these cases have not been studied adequately in regard to lime and phosphorus output. They antedated real modern chemistry in many cases, and are

only now being rounded up for calcium phosphorus checking, as they can be found

It is, however, pretty obvious that we have in this rough class of cases, besides the active giant-cell tumors, many cases probably related to giant cell antecedents, not generalized, that seem to range logically with the osteitis fibrosa group, about the chemistry of which we do not know

There can be no question about the value of the demonstration of lime chemistry in the type of generalized bone involvement first described by von Recklinghausen as osteitis fibrosa cystica

And it should be a matter of local pride that our researchers and surgeons have more than done their share in demonstrating that parathyroid tumors are the ultimate cause of the hyperparathyroidism of which the osteitis is one expression

Once and for all, I think we can accept parathyroid pathology as the cause of v Recklinghausen's disease and high phosphatase as the index of Paget's

But that does not quite answer the whole question of osteitis fibrosa even with cysts

v Recklinghausen's material, as I recall it, was the amazing collection of the Rokitsansky museum

The extreme type of bone degeneration and cystic change that he describes is not common with us. What we have listed as osteitis fibrosa cystica and the non-cystic forms are much more usual. How many of these cases are we going to find due to excessive parathyroid activity? Some of course, but certainly not all. Probably a reclassification is due—on these grounds. Meanwhile the clinician has his problems

Given a case which seems to be giant cell tumor or cyst—or given what seems an unclassifiable cyst, what is to be our routine? *Not waiting*, which first, leaves us in ignorance. Secondly, if we are wrong, it deprives the patient of a chance of cure of a malignant disease. Thirdly, if it is a giant-cell, waiting merely invites further involvement. Fourthly, if it is a cyst, it begs the question, for there is nothing to show that cysts disappear

Not x-ray (without operation) because first, that means x-ray treatment without diagnosis. Secondly, if the growth is already cystic it accomplishes just nothing at all. Thirdly, if it is a giant-cell tumor, x-ray may encourage its spread. There is just as good a chance of this as of the reverse*. If this occurs the end result is going to be worse than with prompt operation. Moreover, the chance of recurrence is admittedly pretty much the same and the recorded cures have often taken a long time

*It seems to be a matter of dosage. Herendeen using the massive dose technique got primary decalcification. (Herendeen R E Results in röntgen ray therapy of giant cell tumors of bone. Ann. Surg. 93 398 [Jan 1931]) Pfahler using fractional dosage has not noted this

I have just re-read Pfahler's paper of 1932† and am not impressed with the results recorded, at all

First, of course the diagnosis is often open. He states that "A biopsy is necessary only when the diagnosis remains doubtful after a thorough roentgen examination by an experienced roentgenologist." To-day, this sounds extraordinarily like nonsense. Of six cases of which skia graphs are given, one is obviously osteitis fibrosa cystica of the parathyroid type, one pretty clearly a cyst *not* cured after nearly six years, and one might be a variety of things. Of the other three, one showed prompt results, one very imperfect repair after over five years and lamentable interference with growth of the bone, and the table of 26 cases is not encouraging

Reasons against open operation are fear of a biopsy, surely not logical in face of a diagnosis of giant-cell all made, and fear of infection, which does not seem to happen with adequate technique. On the other hand, operation does as a rule bring about real repair of the tumor as well as of the easier cyst cases, pretty promptly and pretty regularly*

Much has been said about errors in diagnosis, with much criticism of pathologists' opinions. Leaving aside the vexed matter of classification of sarcomata, myelomata, Ewing's tumors, etc., and considering for the moment only the class provisionally diagnosed as either giant cell tumors or cysts, and the errors seem very few, confined in fact in our series to two x-ray mistakes, and no mistakes by the pathologist

What we wish to know is whether the tumor is malignant or not. Mostly we can get that answer, and in such shape and at such time as to be of real advantage to the patient. I am perfectly ready, this answer given, and acted on, to leave the minute classification to the research laboratory. If we can, at a serviceable time, get more from the histology, well and good, but it will decide little save as to the occasional wisdom of relying on radiation for treatment

It is time we had something like a routine. Given a tumor apparently not sarcomatous, apparently of the giant-cell or cyst class, operation is called for, promptly as a rule, and our fallibility in diagnosis demands these precautions: 1. Definite permission to deal properly with what we meet, at least to the extent of resecting a part of the bone. 2. Biopsy with a tourniquet. 3. Examination by frozen section technique (tourniquet still on). From that point on the problem is the surgeon's

So far as giant-cell tumors are concerned they may be laid open widely and cleaned out thor-

†Pfahler George E and Parry L D Treatment of giant cell bone tumors by roentgen irradiation. Am J Roentgenol 28 151 (Aug) 1933.

*Recurrences occur either way in no small proportion of the active giant-cell cases but can be reoperated with fair certainty of eventual cure

oughly from within anywhere except the spine* Cysts can be laid open wide and any lining membrane, whether of giant-cell tissue or simply fibrous, cleared from the inner wall. With the proper technique in clearing out, I am not sure of the need of corrosives to the inner surface, and they are certainly not to be used unless one is sure.

There seems to be no advantage,—and various disadvantages, to filling with bone chips or what not. Filling the cavity, after bleeding has ceased with greased gauze strips if need be, not packed in tight, gives every chance of quick repair. Dressings are seldom changed, of the same type till granulations cover the inner wall at least. Mechanical support, sometimes with traction, gives protection against fracture or collapse of the walls. Some recurrences seem unavoidable by any technique, not excepting the cases treated by radiation. There has been in my hands no death from operation, no case of osteomyelitis, only one persistent sinus. (Case H.)

There seems to be, except in spinal cases, no real reason for x-ray treatment.

One expects sound healing from within, reasonably prompt, eventually perfectly serviceable*.

For all tumors of this class may I bespeak effective teamwork of x-ray man, pathologist and surgeon. With such a team, acting together promptly, the actual clinical problem presented by this class of growths may be made almost simple†.

DISCUSSION

DR. RALPH B. OBER, Springfield, Mass. Several years ago Dr. Glickman of Springfield referred to me a Jewish woman of forty who had had a slight injury to her wrist. X-ray showed a tumor the size of a small hen's egg involving the lower end of the left radius. Under either it was found to be a soft tissue tumor rather well encapsulated.

The cavity was thoroughly cleaned out, canterized with carbolic acid and packed with iodoform gauze. It healed promptly. Recurrence occurred in a few weeks in spite of radiation.

*In cases close to joints there may be some deformity of joint surfaces—unavoidably. There may for one or another reason be less than normal range of motion as a result.

†For the moment I think the local clean up in single lesions should have precedence over investigation of endocrine function—in time.

The case was referred to Dr. Wheat, the orthopedic specialist at the Springfield Hospital. Under either he removed the lower end of the radius completely and grafted in its place the head of the fibula. No recurrence followed. The graft took nicely and to-day, four years later even by x-ray it is hard to believe that the original radius is not in place.

Both tissue examinations showed giant cell tumor. Dr. Cotton's paper offers some very interesting ideas. If nature has various ways of reacting to stimuli on the way to recovery, conservatism should be the keynote of treatment.

Should the diagnosis prove to be wrong and the condition of a more malignant nature what has operative procedure in the past proved of any more value than conservatism?

DR. E. A. JONES, Manchester, N. H. I should like to ask Dr. Cotton's opinion of this case. A man fifty-five years old had progressive swelling in the left groin for about five months. X-rays taken at this time showed a broadening of the ascending ramus of the ischium with a marked thinning of the cortex. He was given four x-ray treatments and the swelling and tenderness began to diminish, and he went on to what was called practically a complete recovery. This was four years ago and he has had no trouble since that time. The diagnosis was giant-cell tumor. This is the first one that I have ever heard of in that region until Dr. Cotton mentioned his case. I should like to ask Dr. Cotton if he would agree with the diagnosis in this case.

DR. ROBERT B. OSGOOD, Boston, Mass. I report an almost identical case to Dr. Jones which with x-ray therapy seems to show a definitely healing process which has progressed for several years.

DR. COTTON. In reply to Dr. Jones I am skeptical about these giant-cell cases that heal right up. The tumors which are really radiosensitive, if you get anywhere in these cases are likely to prove to be myelomas, but once in a while they are Ewing's tumors so-called. They are much more radiosensitive than any of the others.

The giant cell shows under x-ray one of two things, it either starts to grow at an increased rate with heavy dosages until the cortex has entirely disappeared and then the favorable cases retrograde. Those cases of retrogression show after they have retrograded about the same proportion of recurrences that you get after the operation on those cases. On the other hand if you use fractional doses of x-ray following Pfahler of Philadelphia I can't see that you accomplish much of anything. His published plates seem to me a beautiful atlas of giant cell sarcomata which probably cure themselves any way, and I think that case of yours is going to be found to be in the unfortunate class where nobody knows what it was. It might perfectly well have been a giant-cell but that is not the typical way in which a giant-cell works.

CANCER OF THE MOUTH IN WOMEN*

BY GRANTLEY WALDER TAYLOR, M D †

THE present study was undertaken with the purpose of seeking verification of certain impressions developed in the course of observation and care of women with carcinoma of the buccal mucosa at the Pondville Hospital

Briefly stated, these impressions were that there was a low incidence of cancer of the mouth in women, that there was a different regional incidence of disease in women as contrasted with men, that artificial dentures played a prominent part in the etiology, that in women the disease was relatively less malignant, progressed more slowly, formed metastases later and in fewer cases, and was relatively more curable than in men

Some measure of verification resulted from the study of results in cases of cancer of the buccal mucosa admitted to Pondville during the first two years. The series consisted of 115 cases of which 10, or 9 per cent, were women. Of the total group nine were living and well three years or more after operation, of whom three or 33 per cent were women. It was noted that seven of the ten women were edentulous, and wore dental plates. In a recent series of 83 cases studied at the Massachusetts General Hospital, eight patients were women, in five of whom there was a definite history of trauma from carious teeth or ill-fitting dentures. These findings were suggestive, although the number of cases was so small that dependable conclusions could not be drawn from the data.

A larger experience is that of the Huntington Memorial Hospital. Lund¹ has recently published several studies on the series of cases of buccal carcinoma seen at the Hospital from 1918-1926 inclusive. This series I have further analyzed by means of the punch card summaries which he prepared for his studies.

Distribution. The series consisted of 1128 cases of carcinoma of the buccal mucosa, of which 114 (10 per cent) occurred in women. When the cases are subdivided by regions, it is apparent that women have a relatively high incidence of carcinoma of the upper jaw, and a relatively low incidence of carcinoma of the floor of the mouth.

The causes of this difference in distribution must be sought in study of the etiological factors involved.

Syphilis. Lund's² study of the relation of syphilis to cancer of the buccal mucosa confirmed previous observations that syphilis is of etiological significance only in cancer of the

tongue. The contrast between the sexes in regard to the activity of this factor is very striking. Considering only those cases in which the Wassermann test was done, 25 per cent of the males with cancer of the tongue presented positive Wassermann reactions, as compared with six per cent of the females. Obviously there may have been some clinical selection of cases on whom the test was performed. But the difference between the series remains striking even

TABLE I
DISTRIBUTION

Region	Total Cases	Per Cent of Women
Tongue	409	9.3
Floor	125	4.8
Cheek	151	12.0
Palate	75	14.6
Tonsil	146	9.6
Upper jaw	67	24.0
Lower jaw	155	7.1
Total	1128	10.0

when the incidence of known positive Wassermann reactions is considered in relation to the total group of tongue carcinomas, namely 15 per cent in men as compared with 2.6 per cent in women. It may be reasonably concluded that syphilis plays a very minor rôle in cancer of the tongue in women, in contrast to its marked etiological significance in men.

Tobacco. The extremely significant etiological rôle of tobacco in buccal cancer is emphasized by this study. Data as to the use of tobacco are available in over 85 per cent of the male cases. Unfortunately less than ten per cent of the female patients were specifically questioned on this point, and they all denied the use of tobacco. While definite data are lacking for the other female cases, it is our opinion that the female group did not use tobacco to any great extent. Among the men, only 4.3 per cent were non-users of tobacco. It is probable that the relative immunity of females to cancer of the mouth is in large degree attributable to their relative freedom from the use of tobacco. The use of chewing tobacco was recorded in half the cases of cancer of the cheek (53 per cent) and lower jaw (46 per cent). Among the men the highest percentage of non-users (14 per cent) and an average percentage of use of chewing tobacco (37 per cent) occurred in cancer of the upper jaw. It is reasonable to conclude that cancer of this region is caused primarily by some other factor than the use of tobacco. For the whole group, the use of chewing tobacco was recorded in 37.3 per cent. Use of cigarettes and

*From the Huntington Memorial Hospital and the Pondville Hospital (Massachusetts Department of Public Health).
Read at the meeting of the Boston Surgical Society, December 4, 1933.

†Taylor, Grantley W.—Assistant Surgeon to Out Patients, Massachusetts General Hospital. For record and address of author see "This Week's Issue," page 1131.

snuff was recorded infrequently, and it is perhaps reasonable to conclude that they are less noxious than other forms of tobacco

Dental Status Data in regard to the teeth are unfortunately missing in nearly half the cases, and incomplete in many of the others. Certain conclusions appear reasonable from the

tively high incidence in women of cancer of the palate, upper jaw, and cheek. It is noteworthy that the male patients with carcinoma of the cheek were in a high proportion of cases edentulous, and that the use of dental plates in this group was as high as among women. In thus emphasizing the rôle of dentures, it should be

TABLE II

USE OF TOBACCO

Carcinoma of Buccal Mucosa in Males

Region	Tongue	Floor	Cheek	Palate	Tonsil	Upper Jaw	Lower Jaw	Total
Cases	371	119	133	64	132	51	144	1014
Use not recorded %	15.6	7.5	15	18	14.4	16	20	15
Non users %	4.7	0	6.2	2	3.5	14	3.5	4.3
Chewing %	34	32	53	37	27.4	37	46	37.3
Cigarettes total 15% Snuff 2.3% Smoking 72.4%								

TABLE III

CARCINOMA OF BUCCAL MUCOSA

Dental Status

Region	Data Recorded %	Teeth Good %	Teeth Bad %	Teeth None %	Edentulous With Dentures %	Without Dentures %
Tongue	{ 46 }	7	66	27	45	55
Males						
Females		10	31	58	—	—
Floor	{ 52 }	6	51	42	55	45
Males						
Females		—	—	—	—	—
Cheek	{ 56 }	5.3	53	41	78	22
Males						
Females		23	—	77	—	—
Palate	{ 40 }	4	80	16	0	100
Males						
Females		—	—	100	—	—
Tonsil	{ 38 }	4	74	22	67	33
Males						
Females		—	—	—	—	—
Upper Jaw	{ 70 }	6	60	34	46	54
Males						
Females		—	27	73	—	—
Lower Jaw	{ 62 }	3.3	55	41	52	48
Males						
Females		—	57	43	—	—
Total	{ 50 }	5.6	63	32	53	47
Males						
Females		9	24	67	87	13

Blanks left in the table indicate that numbers were too small to justify percentage computation

data that are available (table III). It may be assumed that edentulous patients had periods of more or less protracted caries and pyorrhea before submitting to complete extractions. It is noteworthy that more women than men have complete extractions, while men keep their bad teeth longer. Women also wear artificial dentures in nearly all cases, while only about half of the men who are edentulous are provided with plates. The common use of dentures undoubtedly plays a prominent part in the rela-

understood that if they are properly used, they are probably much less dangerous than the bad teeth that they supplant. Proper use implies above all that the fit be accurate, and this in turn often requires frequent readjustments as shrinkage of the supporting structures takes place. The material should be non-irritating and of smooth surface and damaged plates should be repaired promptly. Finally, scrupulous cleanliness must be practiced at all times. In those cases in which we find cancer in asso-

ciation with the use of dentures, the plates are loose, or bring abnormal pressure to bear at certain points, or present fissures or breaks. Usually too there has been no attempt to keep the plates clean. It seems indubitable that trauma from jagged and carious teeth plays a prominent rôle in cancer of the tongue. This factor had probably been present, as I suggested above, even in those patients who were edentulous at the time of first examination in the clinic.

Degree of Malignancy When histological study is made of the grade of malignancy, it is found that a definitely larger proportion of the tumors in female cases are of low grade of malignancy.

TABLE IV
DEGREE OF MALIGNANCY

	Grade I %	Grade II %	Grade III %
Males	32	38	29
Females	44	27	29

Lund² pointed out in his study that syphilis increases the virulence of the type of growth. It is probable that the relative infrequency of syphilis as an etiological factor in the female cases may account largely for the observed difference between the sexes as regards the degrees of malignancy. When only cases with negative Wassermann reactions are considered, the more favorable distribution in female cases disappears.

TABLE V
DEGREE OF MALIGNANCY
Cases with Negative Wassermann Reaction

	Grade I %	Grade II %	Grade III %
Males	33	38	28
Females	37	29	33

If an attempt is made to analyze the degree of malignancy in relation to the region involved, the numbers of female cases become so small that reliable conclusions cannot be drawn. It is interesting, however, that half the cancers of the tongue in women were of Grade I malignancy, while only about a quarter of the male cases were in this favorable group, even considering only those with the negative Wassermann reaction.

Rapidity of Metastasis Of all the men reporting within three months of the onset of disease, 43 per cent already showed gross involvement of the cervical lymph nodes. The female cases showed only 24 per cent involvement in the same group. When the group is increased to include all cases reporting within one year

of onset, the males showed metastatic involvement in 43 per cent, and the females in 33 per cent. These figures suggest that metastasis is established early in male cases, that the percentage of male cases showing metastasis does not increase greatly with increase in time, and that buccal carcinoma metastasizes later and less often in women than in men.

TABLE VI
PRESENCE OF METASTASES

	Metastases Already Present at Examination	
	Within 3 Months	Within One Year
Males	42.7%	43.3%
Females	23.6%	32.8%

TABLE VII
5 YEAR CURES IN PRIMARY CASES
WITH NO OR SMALL NODES

	Males	Females
Failures	161	18
Cures	31	7
Inconclusive	9	2
Cures %	16	28

Cures Lund^{1, 2} showed in his study that cases which presented lymph nodes larger than about one centimeter in diameter were essentially incurable. The remaining, "potentially curable" group included 24 per cent of the female cases, and slightly less than 20 per cent of the males. Cures in this group are shown in table VII. It will be seen that for the group the cures in women are 28 per cent, while the cures in men are only 16 per cent. Although the series is small, the difference is so marked as to be suggestive.

SUMMARY AND CONCLUSIONS

Cancer of the buccal mucosa is rare in women as compared with men. Cancer of the upper jaw is relatively more common in women than in men, and cancer of the floor of the mouth is relatively less common.

Syphilis is a less conspicuous etiological factor in women than in men in relation to carcinoma of the tongue.

The almost universal use of tobacco among men may account in large measure for the greater incidence of cancer of the mouth in men than in women. Among the men chewing tobacco is especially prevalent in cases of cancer of the cheek and lower jaw. Tobacco seems to be of least etiological significance in cancer of the upper jaw.

Bad teeth are a very conspicuous etiological factor for the whole group. Men cling to bad teeth longer than women, while the latter have earlier extractions and much more often provide

themselves with dental plates. Improper use of dental plates undoubtedly plays a prominent part in the etiology of cancer of the mouth in women and perhaps of cancer of the cheek in men.

Men in general have tumors pathologically of higher grade of malignancy than women. This is largely due to the influence of syphilis in increasing the grade of malignancy.

Cancer of the buccal mucosa appears to metas-

tasize earlier in men than in women and more frequently.

The prognosis for five-year cure of cancer of the buccal mucosa appears to be better in women than in men.

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DIAPHRAGMATIC HERNIA*

Medical and Surgical Treatment

BY S ALLEN WILKINSON, M D †

THIS report concerns itself chiefly with the medical handling of the smaller varieties of diaphragmatic hernia and a discussion of the symptomatology arising from its presence. Before the advent of roentgenography, hernia of the abdominal organs through the diaphragm was recognized chiefly at the autopsy table and was thought to be a comparatively rare condition occurring only after severe crushing injuries or from congenital defects in the diaphragm. With the increasing frequency of x-ray examinations, it is now generally accepted that diaphragmatic hernia is by no means an infrequent finding. In 1912 Griffin¹ collected 650 cases from the literature and his own practice of which the diagnosis had been made clinically in only fifteen. Morrison² reported forty-two cases in 3 500 gastric cases studied, a ratio of one to eighty-five. Carman and Fineman³ in 1924 reported a ratio of one case in 18 000 for patients of all types, but this figure is unquestionably much too low. In the series reported in this paper the ratio is one to 477, including all cases coming to the Lahey Clinic during the period covered by this study.

With improvement in roentgenologic technic, it was to be expected that the proportion of cases discovered would increase and for a similar reason it is to be expected that diaphragmatic hernias would be discovered in a much earlier stage than those which caused symptoms demanding operation or which resulted in the death of the individual. The cases summarized here illustrate this fact, for it will be seen that only a small number required surgical intervention or caused the death of the patient, while most of them were readily amenable to treatment and a few caused no symptoms of any kind.

The cases summarized here were treated in the last seven years at the Lahey Clinic and represent all grades of hernia through the diaphragm from a tiny protrusion of the stomach

to openings large enough to allow whole organs to pass into the thorax, but most are illustrative of the ordinary herniation found in the course of the routine gastro-intestinal examination.

An outstanding feature in the group was the difficulty in making even a provisional diagnosis of the condition in the vast majority of cases from clinical observations alone. There is no syndrome or symptom complex that is definitely diagnostic although it will be shown that a number of symptoms are very constant findings. The one condition which is most commonly diagnosed provisionally is peptic ulcer and in this series of seventy cases there were forty where this was the tentative diagnosis. Yet, in only ten cases was ulcer found.

TABLE I

DIAPHRAGMATIC HERNIA

Symptoms

Frequency of Occurrence

	Cases
1 Postprandial pain or distress	47
2 Night pain	40
3 Relief by alkalis	37
4 Vomiting	33
5 Substernal pain or lump	15
6 Upper abdominal pain not periodic	14
7 Gas and belching	12
8 Heart burn	10
9 Dysphagia	4
10 Hiccough	2

The variability of symptoms is illustrated in table I. Naturally most of the cases had more than one symptom, but in some the symptoms were very mild or were masked by complaints referable to associated conditions. In only four cases of this series were there no symptoms which might be connected in any way with the presence of the hernia through the diaphragm. It is noteworthy that the four most prominent symptoms listed in order of frequency are all outstanding symptoms of peptic ulcer. The remaining symptoms listed are found in many conditions both functional and organic, involving the whole digestive tract.

From the Gastro-Enterological Department of the Lahey Clinic.

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ciation with the use of dentures, the plates are loose, or bring abnormal pressure to bear at certain points, or present fissures or breaks. Usually too there has been no attempt to keep the plates clean. It seems indubitable that trauma from jagged and carious teeth plays a prominent rôle in cancer of the tongue. This factor had probably been present, as I suggested above, even in those patients who were edentulous at the time of first examination in the clinic.

Degree of Malignancy When histological study is made of the grade of malignancy, it is found that a definitely larger proportion of the tumors in female cases are of low grade of malignancy.

TABLE IV
DEGREE OF MALIGNANCY

	Grade I %	Grade II %	Grade III %
Males	32	38	29
Females	44	27	29

Lund² pointed out in his study that syphilis increases the virulence of the type of growth. It is probable that the relative infrequency of syphilis as an etiological factor in the female cases may account largely for the observed difference between the sexes as regards the degrees of malignancy. When only cases with negative Wassermann reactions are considered, the more favorable distribution in female cases disappears.

TABLE V
DEGREE OF MALIGNANCY
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Syphilis is a less conspicuous etiological factor in women than in men, in relation to carcinoma of the tongue.

The almost universal use of tobacco among men may account in large measure for the greater incidence of cancer of the mouth in men than in women. Among the men chewing tobacco is especially prevalent in cases of cancer of the cheek and lower jaw. Tobacco seems to be of least etiological significance in cancer of the upper jaw.

Bad teeth are a very conspicuous etiological factor for the whole group. Men cling to bad teeth longer than women, while the latter have earlier extractions and much more often provide

covered in younger individuals, whereas the average age is fifty-four years (table V)

The very fact that the diagnosis is almost always made solely by use of the roentgen ray carries with it the corollary that the roentgen ray should be used whenever the diagnosis of diaphragmatic hernia might be a possibility. Because the majority of these hernias cause no

TABLE V
DIAPHRAGMATIC HERNIA

	No of Cases	Maximum	Minimum	Average
Age	70	75	16	54.2 yrs
Weight	64	225	94	157 lbs
R B C	54	6 270 000	2,970 000	4 640 000
Gastric acidity (Ewald meal)	52	81 Free	0 Free	33 Free
		88 Total	7 Total	54 Total
Duration	62	Lifetime	4 days	5.5 yrs
Achlorhydria	4			

obstruction, it is usually impossible to visualize them by fluoroscopy in the erect position, but practically all can be seen if the table is flat or in the Trendelenburg position. As a rule the hernia is easier to visualize by fluoroscopy than by films for the reason that it may not remain above the diaphragm or may not remain filled during the entire time of the observation. In some cases it fills only if the patient is turned rapidly to one side or the other.

Symptomatically a small diaphragmatic hernia must be differentiated from peptic ulcer, gall bladder disease, reflex disturbances of the stomach due to irritable colon, and simple hyperchlorhydria. Large hernias are more apt to cause obstructive symptoms or disturbances in the chest, such as dyspnea, substernal pain, heart pain, or dysphagia. Roentgenologically the smaller variety must be differentiated from cardiospasm with a dilated esophagus and cardioesophageal relaxation, to which Robins and Jankelson⁹ have called attention. The large hernias may, paradoxically, be more difficult to diagnose than the smaller type. LeWald has pointed out that thoracic stomach is similar in appearance, but there is no hernia, the esophagus is short, and the pylorus passes through the diaphragm. Eventration of the diaphragm simulates hernia, but the stomach is entirely below a very high diaphragm. Roentgenograms of the chest may show a gas bubble or fluid level simulating pneumothorax or hydrothorax.

The surgical treatment of diaphragmatic hernia has many advocates including Harrington¹⁰, Woolsey¹¹, Truesdale¹², and others, but these writers are referring to the large hernias where the organs concerned are chiefly above the diaphragm. On the other hand, most of the hernias in this series are small enough not to produce symptoms demanding operation, and they are usually controlled by medical measures. The

keynote of medical treatment has been indicated by Sara M. Jordan¹³, who has stressed the importance of functional tranquility in the treatment of abnormal mechanisms. In that sense the treatment here is largely symptomatic. It is of the utmost importance to treat and correct the associated conditions, whether functional or organic. If an ulcer be present the usual treatment is instituted and as the ulcer symptoms are relieved, the hernia ceases to be troublesome. Irritable or unstable colon is so often present that it must be treated, and in most cases other forms of treatment are ineffective until the bowel is performing normally. It is striking to watch the improvement and disappearance of a patient's complaints of heartburn, substernal distress and pain after eating

TABLE VI
DIAPHRAGMATIC HERNIA

Medical Treatment

Method of Treatment	Number Treated	Relieved	Failures
Hospital Ulcer Management	14	11	3
Hospital Modified Ulcer Management	12	12	
Hospital Bowel Management	14	14	
Ambulatory Bowel Management	11	11	
Total	51	48	3

by the simple correction of a disturbed bowel function and the institution of a bland diet. Table VI indicates the types of medical treatments used. It will be noted that twenty-six cases, or 50 per cent of those treated medically, had some form of ulcer treatment, although the formal Sippy diet was followed in only fourteen cases. The other cases so treated were those with a high acid who failed to respond to a simpler form of treatment. If a hyperacidity is found, it will usually be necessary to correct this by the administration of alkalis. One point of interest is that these cases tolerate magnesia poorly. Magnesia stimulates the colon to overactive peristalsis and increases spasm in the already irritable bowel which is such a common finding in these people. This, in turn, reflexly disturbs gastric motility, and distress is increased instead of relieved. If constipation exists it is preferable to control it by dietary measures combined with antispasmodics rather than by any form of laxative.

Table VII indicates the methods of treatment used in the surgical cases. This group includes two cases that were medical failures. It is noteworthy that one of the cases with an abdominal

Since there is no characteristic clinical symptom complex, the diagnosis can only be suspected at best, and in those instances where the hernia is composed of a fraction of the cardiac end of the stomach, it will usually be missed, even as a tentative diagnosis. Harrington states that "the symptoms of diaphragmatic hernia are probably more commonly confused with those of cholecystic disease than with any other lesion of the upper part of the abdomen." In Morrison's² series the clinical diagnosis was ulcer or gall stones in practically all cases. Bevan⁴ made the same observation in 1920, and Richardson⁵ in 1929 calls attention to the same fact.

While it is true that the larger, more severe grades of herniation of the stomach or other organs through the diaphragm can and do simulate gall bladder disease, it seems that this phase has been unduly stressed, while the simulation of gastric or duodenal ulcer by the much more common, small hernia of the stomach through the esophageal hiatus has not received the attention it deserves. In this series, the contents of the hernia consisted of the stomach only in sixty-seven cases, and in forty (60%) of these the tentative diagnosis was peptic ulcer. If the symptoms so strongly suggest peptic ulcer in 60% of cases, it follows that somewhat similar conditions must be operative, and that, whenever a diaphragmatic hernia of the stomach is present, the development of symptoms simulating ulcer would be more apt to occur than any other symptom complex.

TABLE II
DIAPHRAGMATIC HERNIA

Associated Diseases

Disease	Cases
Irritable colon	39
Diverticulosis	16
Ulcer, peptic or esophageal	10
Cholelithiasis	8
Hernia elsewhere	6
Cirrhosis of liver	2
Carcinoma of colon	1
Acute appendicitis	1

Diaphragmatic hernia, particularly the lesser gradations of it, may be the only organic lesion found, but there is usually some associated functional condition which often overshadows the picture. The most frequent of these is irritable or unstable colon in 55 per cent of cases (table II). Chiefly because they are common in the same age group, diverticulosis occurs in 23 per cent and gall stones in 14 per cent of the cases respectively. The findings in this group of cases have impressed us strongly with the necessity for a complete gastro-intestinal study in all cases presenting symptoms referable to the alimentary tract.

The observation has been made that many cases of herniation of the stomach through the

diaphragm develop an ulcer in the hernia. Mathews and MacFee⁶ have reported a series of such cases. Harrington states that hemorrhage from gastric erosion at the site of the esophageal hiatus produces ulcer. There were ten cases of ulcer in this series (table III) of which only three had any direct relationship to the hernia. One of these was visualized by esophagoscopy and later caused the death of the patient by

TABLE III
DIAPHRAGMATIC HERNIA

Relation to Ulcer

Males	16
Females	54
Cases suggesting peptic ulcer	40
Duodenal ulcer { Males 5 } { Females 1 }	6
Gastric ulcer—Females	1
Esophageal or hernial ulcer { Male 1 } { Females 2 }	3

hemorrhage. There were six duodenal ulcers and one gastric ulcer, all of which should be regarded as coincidental findings rather than as results of the hernia.

TABLE IV
DIAPHRAGMATIC HERNIA

Size of Hernia

% of Stomach Above Diaphragm	No of Cases
10%	20
15%	21
20%	12
25%	9
33%	3
50%	2
100%	1

Since these observations concern chiefly small hernias, it is of some interest that 79 per cent of our gastric hernias were estimated roentgenologically to contain 20 per cent or less of the stomach (table IV). This fact also explains why the symptoms arising from these hernias are relatively mild and why they differ from the symptoms ascribed to hernia in many of the earlier writings. In most of the articles the cases reported were extensive, and the pathological conditions found were much more involved than in most of our own. Harrington⁷, LeWald⁸, Morrison², Richardson⁵, and others have called attention to the short esophagus in most of these cases. The majority of the cases reported here are of this type. The esophagus enters the top of the hernia and appears definitely shortened. It seems probable that most of these are of congenital origin, but it is unlikely that the defect has always been present. If this were true more hernias should be dis-

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CHRONIC ARTHRITIS AND ITS TREATMENT*

BY H ARCHIBALD NISSEN, M D †

INTELLIGENT discussion of any significant problem provokes innumerable questions. Discussion of arthritis invariably revolves about questions concerning safe, efficacious analgesics for relief of pain, the value of vaccine and intravenous drug therapy, the classification of arthritis by type, the reason for contradictory results of the same treatment applied to individuals apparently showing the same type and extent of arthritis, the different individual reactions to infection, allergy, and diet.

Twenty-four years ago Nichols and Richardson¹ in an article on arthritis wrote

"Conclusions 1 In non-tubercular deforming arthritis there are two pathological types of joint changes (1) the proliferative type which tends to destroy joint cartilage and leads to ankylosis of adjacent joint surfaces and (2) the degenerative type which tends to destroy the joint cartilage and produce deformity without ankylosis

"2 These two types do not correspond to two definite diseases but each type represents reaction of the joint tissues to considerable variety of causes

"3 In neither type if the original injury is sufficiently severe, or if the causative factor continues to act, is there likelihood of regeneration of a perfect joint

"4 A joint injury of a sufficient degree even if the primary cause ceases to act, may of itself continue to act in a vicious circle as a cause of continued joint change

"5 Clinically the aim should be to recognize the type and stage of lesion present and then to determine and remove the active cause

"6 The prognosis should be guarded because of the difficulty in determining the active cause because of the unlikelihood of complete regeneration of a severely injured joint and because of the known clinical history of many of the cases"

Since 1909 progress has been made regarding the general conception and care of arthritis and in recent years an increasing interest in the subject has arisen, but the actual etiology of the disease and the prognosis of the individual case remain uncertain. Solution of these problems lies in two contemporary lines of research,—laboratory and clinical. To the scientist in the laboratory falls the study of the disease *arthritis* to the clinician in practice, the study of the *individual* who has joint impairment or arthritis. One is dependent on the other and each is equal in importance. This paper presents the point of view of the clinician, and emphasizes the therapeutic value of the psychiatric approach to the arthritic patient.

Accepting the truth of Nichols and Richardson's statement, arthritis is *one* disease, varying in the individual in different decades, in different occupations, and with different response to infections. (In any number of instances serial radiograms showing both degenerative and proliferative changes in the same patient offer proof of this.) Therefore *individualistic reaction* being the single generally recognized factor in the arthritic problem logic points to the *individual* as the center of concerted study. The first requisite of treatment of the individual is study of the entire body and recognition of all the mental and physical defects. The only way to recognize the physical defects is by most careful and thorough examination and inclusive radiographic and laboratory tests all repeated at regular intervals. The only way to recognize the mental components of the picture is by gaining the patient's complete confidence and thereby gradually learning the real self of the individual his joys and sorrows.

The body is a beautifully balanced piece of machinery and as in the case of any machine, difficulty in one part inevitably causes difficulty in other parts. Once the perfect balance, homeostasis as Cannon² calls it, is destroyed dysfunction small or great in one after another of the various systems which go to make the whole follows. The first, tiny break in the machine's perfect mechanism may be no more

Read before the York County Medical Society at the Annual Meeting held in Kennebunk, Maine, January 10, 1934.

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repair has since had a recurrence of the hernia, but is having no symptoms of it

Paralysis of the diaphragm by phrenic exeresis offers a theoretically ideal method of treatment in many hernias where the symptoms persist after adequate medical trial. It prevents motion and consequent pinching by the diaphragm of an incarcerated hernia. Because the diaphragm rises, the hernia may reduce itself in some instances. The cessation of diaphragmatic motion prevents any tendency to pump the contents of the stomach from a region of positive pressure below the diaphragm to a region of negative pressure in the thorax. Practically it has offered a definite cure for the dis-

In table VIII are listed the deaths that have occurred in this series. One was caused by hemorrhage from an esophageal ulcer, from disease presumably unrelated to the diaphragmatic hernia, and two from operative procedures. One of these cases was moribund on admission and had only a phrenicotomy and a jejunostomy in an attempt to relieve a high obstruction. The hernia contained stomach and small intestine. The other case died of postoperative pneumonia.

SUMMARY

Of seventy cases, sixteen males and fifty-four females, there were forty in whom the symptoms suggested peptic ulcer more than any other

TABLE VII
DIAPHRAGMATIC HERNIA
Surgical Treatment

Case No	Prev Med Treatment	Contents of Hernia	Type of Operation	Result	Reoperation
1	No	Colon, splenic flexure	Abdominal repair	Good	—
2	No	Stomach small intestine—strangulated	Phrenicotomy, jejunostomy	Died obstruction	—
3	Yes	Stomach	Phrenic exeresis	Good	—
4	Yes	Stomach	Phrenicotomy	Good for 6 mos, then recurrence	Phrenic exeresis, good result
5	No	Stomach	Abdominal repair	Recurrence pain	Abdominal repair, good result
6	No	Stomach	Abdominal repair	Died, pneumonia	—
7	No	Stomach	Abdominal repair	Recurrence, no symptoms	—

treating attacks of hiccoughing to which some of these cases are subject, and in the few cases of this series where it was used, it relieved pain and substernal distress as well. Some of the

gastro-intestinal condition. In ten of these, an actual ulcer was demonstrated.

The diagnosis of diaphragmatic hernia is almost solely a roentgenologic diagnosis. Frequently a special technic is necessary to demonstrate the lesion when it is present.

Associated gastro-intestinal complications are common, and may produce the only symptoms of which the patient complains.

Successful medical treatment must be directed at the associated conditions rather than the hernia itself in nearly all instances. Medical treatment is preferable to surgery in most small hernias.

Surgical treatment should be reserved for those cases where medical treatment fails to control the symptoms, and the size of the herniation is not of itself a reliable guide in deciding for or against surgery.

A phrenicotomy is advised as a preliminary to more extensive procedures, and it, alone, may relieve the condition.

TABLE VIII
DEATHS

- 1 Postoperative intestinal obstruction
- 2 Postoperative pneumonia
- 3 Hemorrhage from esophageal ulcer 7 months after medical treatment.
- 4 Carcinoma of liver 5 months after treatment. Location of primary lesion unknown.
- 5 Heart failure 6 months after treatment. No symptoms of hernia after treatment.

large hernias require no surgical intervention. In particular, extensive surgery is contraindicated if the esophagus is short and there is no obstruction. In the short esophagus type with a large part of the stomach above the diaphragm, torsion may occur resulting in obstruction. Here phrenicotomy or phrenic exeresis may offer a simple, safe and immediate relief, whereas operative repair of the defect is impracticable.

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"6 The prognosis should be guarded because of the difficulty in determining the active cause because of the unlikelihood of complete regeneration of a severely injured joint and because of the known clinical history of many of the cases"

Since 1909 progress has been made regarding the general conception and care of arthritis, and in recent years an increasing interest in the subject has arisen, but the actual etiology of the disease and the prognosis of the individual case remain uncertain. Solution of these problems lies in two contemporary lines of research,—laboratory and clinical. To the scientist in the laboratory falls the study of the disease *arthritis* to the clinician in practice, the study of the *individual* who has joint impairment or arthritis. One is dependent on the other and each is equal in importance. This paper presents the point of view of the clinician, and emphasizes the therapeutic value of the psychiatric approach to the arthritic patient.

Accepting the truth of Nichols and Richardson's statement arthritis is *one* disease varying in the individual in different decades, in different occupations and with different response to infections. (In any number of instances serial radiograms showing both degenerative and proliferative changes in the same patient offer proof of this.) Therefore *individualistic reaction* being the single generally recognized factor in the arthritic problem logic points to the *individual* as the centre of concerted study. The first requisite of treatment of the individual is study of the entire body and recognition of all the mental and physical defects. The only way to recognize the physical defects is by most careful and thorough examination and inclusive radiographic and laboratory tests all repeated at regular intervals. The only way to recognize the mental components of the picture is by *gaining* the patient's complete confidence and thereby gradually learning the real self of the individual his joys and sorrows.

The body is a beautifully balanced piece of machinery and as in the case of any machine, difficulty in one part inevitably causes difficulty in other parts. Once the perfect balance, homeostasis as Cannon² calls it, is destroyed, dysfunction small or great in one after another of the various systems which go to make the whole follows. The first tiny break in the machine's perfect mechanism may be no more

*Read before the York County Medical Society at the Annual Meeting held in Kennebunk, Maine, January 10, 1934.

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repair has since had a recurrence of the hernia, but is having no symptoms of it

Paralysis of the diaphragm by phrenic exeresis offers a theoretically ideal method of treatment in many hernias where the symptoms persist after adequate medical trial. It prevents motion and consequent pinching by the diaphragm of an incarcerated hernia. Because the diaphragm rises, the hernia may reduce itself in some instances. The cessation of diaphragmatic motion prevents any tendency to pump the contents of the stomach from a region of positive pressure below the diaphragm to a region of negative pressure in the thorax. Practically it has offered a definite cure for the dis-

In table VIII are listed the deaths that have occurred in this series. One was caused by hemorrhage from an esophageal ulcer, from disease presumably unrelated to the diaphragmatic hernia, and two from operative procedures. One of these cases was moribund on admission and had only a phrenicotomy and a jejunostomy in an attempt to relieve a high obstruction. The hernia contained stomach and small intestine. The other case died of postoperative pneumonia.

SUMMARY

Of seventy cases, sixteen males and fifty-four females, there were forty in whom the symptoms suggested peptic ulcer more than any other

TABLE VII
DIAPHRAGMATIC HERNIA
Surgical Treatment

Case No	Prev Med Treatment	Contents of Hernia	Type of Operation	Result	Reoperation
1	No	Colon splenic flexure	Abdominal repair	Good	—
2	No	Stomach small intestine—strangulated	Phrenicotomy, jejunostomy	Died obstruction	—
3	Yes	Stomach	Phrenic exeresis	Good	—
4	Yes	Stomach	Phrenicotomy	Good for 6 mos, then recurrence	Phrenic exeresis, good result
5	No	Stomach	Abdominal repair	Recurrence, pain	Abdominal repair, good result
6	No	Stomach	Abdominal repair	Died, pneumonia	—
7	No	Stomach	Abdominal repair	Recurrence no symptoms	—

treassing attacks of hiccuping to which some of these cases are subject, and in the few cases of this series where it was used, it relieved pain and substernal distress as well. Some of the

gastro-intestinal condition. In ten of these, an actual ulcer was demonstrated.

The diagnosis of diaphragmatic hernia is almost solely a roentgenologic diagnosis. Frequently a special technic is necessary to demonstrate the lesion when it is present.

Associated gastro-intestinal complications are common, and may produce the only symptoms of which the patient complains.

Successful medical treatment must be directed at the associated conditions rather than the hernia itself in nearly all instances. Medical treatment is preferable to surgery in most small hernias.

Surgical treatment should be reserved for those cases where medical treatment fails to control the symptoms, and the size of the herniation is not of itself a reliable guide in deciding for or against surgery.

A phrenicotomy is advised as a preliminary to more extensive procedures, and it, alone, may relieve the condition.

TABLE VIII
DEATHS

- 1 Postoperative intestinal obstruction
- 2 Postoperative pneumonia
- 3 Hemorrhage from esophageal ulcer 7 months after medical treatment
- 4 Carcinoma of liver 5 months after treatment. Location of primary lesion unknown
- 5 Heart failure, 6 months after treatment. No symptoms of hernia after treatment

large hernias require no surgical intervention. In particular, extensive surgery is contraindicated if the esophagus is short and there is no obstruction. In the short esophagus type with a large part of the stomach above the diaphragm, torsion may occur resulting in obstruction. Here phrenicotomy or phrenic exeresis may offer a simple safe and immediate relief, whereas operative repair of the defect is impracticable.

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pus oozing from the sockets, and no arthritis be present. Another may show a chronic middle ear disease (which means actually reinfection from time to time), tuberculosis, active or inactive, chronic cystitis with pyelonephritis above, or may actually demonstrate after death a variety of focal or generalized infections though he showed no demonstrable arthritis during life. In other words, it is the individual's reaction to infection rather than infection in the individual that is important. Arthritics who have infections present may be reacting to a protein, either exogenous or endogenous. The presence of bacteria in the tissues with no immediate response, functional or pathological change in the joints, indicates the type of tissue (or soil) resistant to, or able to carry, this extra load, whatever protein irritant or unknown irritant may be present in the body. Then *what* changes the tissue resistance to these extra loads, so that it fails to hold them in check, or to render them harmless in the body? Does the answer not lie in general disorder of the homeostasis, and is the response of the body to infection, toxemia or bacteria not due to the homeostatic imbalance rather than to the actual agents *per se*?

Whereas no one constant etiological cause of arthritis has yet been found, twenty-two or more common factors have been noted in different patients in varying numbers just previous to the development of arthritis. Whether one or more of these factors may be the extra straw that turns one individual into an arthritic, another into a schizophrenic, and a third into some other type of chronic disease syndrome is not known. Study of arthritis along lines similar to those being used in dementia praecox may bring the answer nearer, if attention is directed to the *individual reaction* rather than to any specific agent producing the arthritic process.

Systemic involvement is found in the arthritic irrespective of age or known duration of the arthritis. Changes which involve every portion of the body are noted in different individuals. The very multiplicity of functional disturbances points definitely to the conclusion that there may be no one etiological agent in arthritis, but that the process may follow psycho-physio-chemical changes, in some instances developing upon poor tissue inheritance, in some precipitated by the extra load of bacterial invasion or allergic reaction, but in many the vicious psycho-physio-chemical cycle starts first in the psychical life of the patient after years of inner conflict, maladjustment to environment, thwarted hopes and desires, or nervous shock and strain. A review of the life histories of a group of arthritics shows in many, emotional instability unfulfilled ambition, defeating drudgery of life, sufficient to account for the initial disturbance of the endocrinal system. Endocrine dysfunction may alter the function of the gastrointestinal

tract, the cardiocirculatory system, the liver, the kidneys, or the involuntary nervous system, with ensuing or coincidental joint changes. Many have lived for years preceding the joint manifestations with inner conflicts, unexpressed rebellion against life as it was meted out to them, work when they wanted schooling; repeated, unwished-for child bearing, longing for the big things in life when obviously the little things must be that individual's portion, in short, there is more than sufficient background to produce a body revolt, either cataclysmic, or slow, insidious and progressive.

A reasonable hypothesis arises at this point. If one accepts the broad separation of peoples into introverts and extroverts, may it not be that the introvert reacts to overwhelming odds by a psychopathological response whereas the extrovert obtains the same relief from responsibility through a joint, or arthritic, reaction? Comparison of the dementia praecox, or schizophrenic, patient with the arthritic brings out interesting points of similarity, the difference being the outlet thrust upon the individual. In one, dysfunction of the personality predominates; in the other, dysfunction of the bone and joint furnishes an unrecognized alibi for withdrawal from active life, or a means, through capitalizing disability, of gaining attention which had been previously unobtainable. From the broad biological point of view all such reactions must be regarded as fundamentally purposive.

Hoskins³ has written on the "Schizophrenia Problem from the Standpoint of the Investigator." With a few changes and a few additions, the etiologic factors listed by Hoskins as potentially important in the schizophrenic might well be transposed for those of the arthritic. He lists: Emotional conflicts. Withdrawal of interest in environment and transfer to phantasy life. Bad mental and physical habits. Industrial and social maladjustment. Structural defects of body. Defective brain metabolism. Abnormal endocrine function. Autonomic nervous dysfunction. Cardiovascular insufficiency. Defective gastrointestinal functions. Liver dysfunctions. Abnormal mineral metabolism. Disturbed acid-base equilibrium. Vitamin deficiency. Infectious and surgical disease. Other metabolic disease.

SUMMARY

This view of the arthritic problem may be repeated in one sentence. *Study and know your patient thoroughly from every avenue of approach.* If the physician develops a scientific type of mind, the emotional checkreins will not hinder him from attempting to obtain every bit of information possible about a patient. With this as a basis, a practical outline of living may then be built. The patient's problems cannot be dismissed by saying, forget it, or we won't dis-

than slight environmental maladjustment, domestic friction, or seemingly minor worry. The continuance, however, for any length of time of such mental disturbance may soon be followed by signs of slight imperfections elsewhere in the body. This means that regardless of the particular thing of which the patient complains, joint, heart, or kidney, the first step is to study the patient as an individual, his body in its entirety, his physiology and chemistry, his mind and mental outlook on life, his emotional reactions, his family inheritance, his early environment. The combination of all these factors makes for the physical changes present in the arthritic, who shows a definite psycho-physio-chemical reaction to an unknown quantity X as the original excitor. The important influence on normal body physiology of mental or psychical reaction is well known. In abnormal physiology it naturally assumes greater bearing. For instance, in a diabetic following his routine and practically sugar free, extra fatigue plus a tremendous emotional crisis may precipitate a typical sugar storm. Minor physical reactions to emotional stimulus, such as blushing, tachycardia, or blanching of the fingers, are common occurrences. As the insidious physiologic dysfunctions occur in a potential arthritic, the joint in turn may be affected.

Prolonged work with arthritic patients emphasizes two particular points: first, the fact that the joint involvement is in almost every case but one manifestation of general body dysfunction, with and without actual pathological change (few arthritics show normal function of the entire body), secondly, the fact that *time and patience* are essential in the successful treatment of the chronic case. They are essential, first, in gaining the necessary knowledge of the individual patient through the study of his physical and psychical make-up, and secondly, they are equally essential in making practical use of this knowledge when gained.

The different signs and manifestations of arthritis seen in general practice are too familiar to need detailed description. In the sorry pageant is the individual with repeated mild flare-ups of pains, with tissue congestion but no bone or joint change, the one with moderate intermittent disability and pain, mechanical in origin, due to lipping and spurring of bone in back, hip or knee. Among these is the patient who has probably had degenerative bone and joint change present for a short or long time but has not had symptomatic knowledge of such change. Radiograms of so called normals have shown this to be correct. If an individual is one of this group, in any decade, activating factors such as exposure to inclement weather, occupational hazards, various infectious irritants, exogenous and endogenous, endocrinal disturb-

ances, or psychogenic imbalance, may precipitate the onset, or produce recurrent flare ups, of symptoms and signs in already damaged joints. Experience teaches that there is a *natural* duration of such attacks. The average length of an attack, or flare-up, is from six weeks to a few months. Then there is the patient with a single stiff joint, the one with rigid spine, or with spine and hips involved, and finally the one with multiple joint destruction and deformity with associated skin and muscle change. Duration of arthritis does not appear to indicate which one of these courses will be taken, nor is it sufficient in itself to suggest what to expect in the future.

These different final arthritic stages are easily recognized. What is necessary to successful treatment is the ability to foresee, and if possible forestall, the patient's future course when the first vague, or acute, symptoms appear. This again requires detailed knowledge of the patient, through his first few years of life to the moment the physician sees him. Repeated visits and conversations between patient and doctor are required to learn the real life story, the family relationships, early environment, early nutrition, educational opportunity, past history, present illness, and most difficult and most important, the inner self of the patient, his emotional, nervous and mental adjustment, or maladjustment, to life. It is not easy to secure an accurate history from a chronic patient. The first history taken tells none of these things. An initial statement of "No history of shock or worry" is usually disproved after repeated visits and friendly talks between the physician and patient, when confidence and faith have been established, and the self-protective walls the patient has built up have been allowed to disintegrate. This is one reason why the physician must put in ten or fifteen years of apprenticeship with a definite group of patients, and follow them closely, in order to draw accurate conclusions in chronic disease.

ETIOLOGY

As regards etiology of arthritis, undoubtedly heredity plays a part, not necessarily an arthritic inheritance, but the constitutional inheritance, the mental and tissue characteristics to which the individual falls heir. The early absorbed motivations for later living and the nutritional program followed for the first years of life, especially the first, are important. Infection, in some cases particularly, is the definite, additional load which hastens the onset of arthritic manifestations. The arthritic syndrome may appear whether the probable focus of infection is left in the body or is removed. One individual may have a definite endocarditic septicemia or bacteremia and not show any joint involvement. One may show infected teeth, with

should again be attempted as the signs of over-fatigue subside. Massage has definite measurable subjective and objective value if given by a competent physiotherapist. Heat in any form which is most comforting to the patient is useful.

ALLEVIATION OF PAIN

The patient consciously wants two things—relief and freedom from pain and avoidance of future crippling. (Unwittingly he may want what he practically always needs—mental and emotional outlet and rehabilitation.) Opiates take first place for relief of pain. Any analgesic which is effective in alleviating pain in an individual patient is the one to use for that patient, provided it has been proved harmless. The dosage of any drug should be that sufficient to produce the desired pharmacological effect. If more opiates were used to relieve pain possibly less joint deformity would occur in the arthritic, particularly if used during the acute stages of the disease when the one desire is to find a comfortable position for an aching joint or during the time that corrective plaster casts are first applied. This new and sometimes uncomfortable or painful position of a joint necessary in corrective and preventive work, will be better tolerated by the patient and will be maintained for longer periods if sufficient medication is administered to obliterate the ache. Obviously the administration of sedatives and analgesics demands good judgment and experience on the physician's part.

VACCINE THERAPY

There may be a certain amount of improvement obtained in some arthritides through vaccine therapy. However, one must remember that this vaccine therapy is not specific or at least has not been so proved conclusively to date nor has it been proved more beneficial than oral medication. In gauging the efficacy of any treatment one should bear in mind the average duration of the usual joint flare-up from the time of its onset to the time of its subsidence. The result of a specified treatment should be tested to see if this expected period of relapse has been shortened, if the interval period of remission has been lengthened, or if the frequency of relapse has been decreased. As a rule the best results of vaccine and intravenous drug therapy occur in the so-called mixed type of arthritis where to underlying hypertrophic or degenerative changes with no joint symptoms has been added irritation resulting from reaction to infection strain fatigue etc. Such a combination is apt to run its course whichever irritant is present and at the end of the flare-up the joints usually resume practically their former function. Six weeks to three months seems to be the average duration of such a flare-

up if it is due to one application of a single excitant. On the other hand, if the preexisting, inactive degenerative changes are transformed into an active arthritis by multiple, or repeated irritants the definite period of flare-up is lengthened and may become a permanent condition with progressive joint involvement. If vaccine or intravenous therapy is used in this type of individual and improvement is noted at the end of say sixteen injections given at weekly intervals the physician may well question whether his treatment per se caused this improvement.

However if real benefit to the patient by vaccine therapy is proved the results must be related in some way to the protein introduced into the body and the body's reaction to it which for want of a better term we may call allergic response to a protein. In other words an element is introduced which the body's normal autonomic system does not handle without producing certain changes elsewhere in the body. Desensitization means the introduction over a fairly long period of time of certain substances which are irritants. Even when this desensitization has diminished the sensitivity of a joint, the arthritic element is not altered. Pain may be abolished and greater functional range of activity may be obtained but actual joint change, if present remains constant. It has been suggested by some writers⁵ that minor allergic reaction or positive sensitiveness to certain proteins may vary from month to month. If this is so it seems more reasonable to use what is known to be harmless such as milk or peptone, or milk protein than to use actual vaccine of suspended dead bacteria in saline solution or mixtures of antigens which at times produce a disagreeable systemic reaction.

DIET

Dietary information is sometimes difficult to obtain from the patient. This is made more accurate if he is asked to keep a daily record of the actual food and liquid ingested, and such records over a few weeks' time are studied. In the matter of diet the points to be remembered are attractive preparation and serving of the food as well as its fundamental wholesomeness. The quantity given should be that which will give adequate nourishment to the individual involved. As there is no one drug for arthritis so there is no one diet for all arthritic patients. However the accepted diabetic diet seems a good basis on which to build the individual arthritic diet. Modifications are necessary. In one patient the protein should be increased in another the carbohydrate should be decreased depending on that individual's ability to handle sugar and utilize it in whatever form it is given. In others it is well to reduce the cholesterol intake because of its uncertain

cuss the matter, if it happens to be an unpleasant sex incident, or even by the mere recognition of the problem without offering a practical solution. Never pry into a patient's inner soul and mind, and, because you are at a loss for a remedy, leave him stripped bare. Do not use psychotherapy at all unless prepared to carry through to a solution each contingency as it may arise. The general practitioner, or internist, must take the time with each patient to obtain this history in detail, he must know the man or woman as a human being, must know his background, his early environmental influence. He must gain the patient's confidence, and this requires patience, until that individual knows he has found that for which practically every chronic disease patient actually yearns, i.e. some one genuinely interested in himself, his trivial signs, symptoms and problems. This means of course unhurried talks frequently repeated. However, since the chronic, whether his immediate problem be joints, heart or other system, almost invariably shows dysfunction of several body systems, it is evident that such multiple change requires the knowledge and help of as many specialists as there are fields involved. Equally evident is the fact that each specialist tends to see the patient in the light of his own specialty, and unconsciously emphasizes that part of the body. The internist's job is that of liaison officer, or pilot. He must see the patient as an entity, and must keep the balance, so that undue emphasis is not placed on any one part to the neglect of another.

TREATMENT

Treatment of the arthritic first and always must be recognized as individualistic, not from the point of view of the physician prescribing treatment but from the point of view of the patient receiving it. The altered function of the many different body systems shown in each individual patient makes it obvious that no one drug, no one form of treatment, can be omnipotent to stimulate and restore to normal all the various systems involved.

Certain measures are practical and of definite value. Their value to the patient's immediate relief is possibly indirect, but still definite, their primary importance is to aid in arriving at an early diagnosis. There are serial tests of various kinds, adequate and comprehensive enough to enable the physician to differentiate functional and pathological signs and symptoms, and to determine accurately the time at which pathological change may supervene on previous functional abnormality. So many of the complaints of the chronic patient have been found to be due to functional disturbance of a particular system that the danger becomes real of overlooking changes which may not be functional. No symptom or sign should be considered as merely functional until pathological change

has been absolutely ruled out. Such serial studies should include radiograms, not only of joints, but of the skull, brain, chest and gastrointestinal tract, as well as the genito urinary tract when indicated. Serial radiograms demonstrate the development of sclerotic changes. After radiographic technique has been standardized vascular changes may be recognized before calcification of the vessels has become actual, and in time prevention of such calcification may be possible.

The blood count should be checked at six month intervals at the longest. Chronic arthritides show a definite tendency to anemias. Certain blood chemical determinations, such as sugar tolerance, cholesterol, nitrogen metabolism and sedimentation rate should be made and repeated periodically. Kidney function should be further tested by frequently repeated urinalyses, by phthalein tests, and by the concentration and dilution test.

Photographs of the patient in the nude record year by year the changes, whether for better or worse in posture, motion and deformity of the joints. Such photographic records are bound to be more accurate than verbal description. (Their accuracy depends naturally on the way the photograph is taken. For instance, if measurement of permanent flexion deformity of a knee is desired, the patient must be lying on a firm surface, not on a soft, yielding mattress, when the photograph is taken.)

All these tests or measurements, repeated at regular intervals, will help to clarify many existing impressions, and may shift them from the column labeled *impressions* to one labeled *facts* in the ledger of clinical medicine.

SUPPORTIVE MEASURES

Supportive, stimulative treatments are very essential. One of the first of these is *rest*, general and local. A precise presentation recognizing the value of rest to relieve pain was written years ago by Hilton.⁶ Today this fact is still appreciated. If one single remedial agent in the treatment of arthritis were to be chosen, *rest* would certainly be the one selected. Routine rest periods must be prescribed and planned as any other form of treatment. Two forms of rest have been mentioned, general and local. There is a third, *rest of mind*. Often rest of mind is secured only by genuine psychotherapy.

Exercises, also general and local, supervised, and sufficient to increase the tone of the muscular system, are equally important. Voluntary daily movement of each joint for a few minutes should be a part of the daily routine. The number of the exercise periods and their duration depend upon the individual's reaction. Increase in pain, muscle tremor, trembling shivering, etc., after a few such motions indicates less frequent and shorter periods, gradual increase

Course A. If several operations were required for reconstruction it seemed that the interval between should be at least one year

PSYCHOTHERAPY

Psychotherapy has been left to the last because special emphasis is laid upon it. It is the treatment which should be instituted first from the moment of contact between doctor and patient, running parallel to all other forms of treatment used. The better the understanding developed between the physician and patient, particularly the chronic patient the better the result obtained. So often one finds in the discharge note of a chronic patient the words "Discharged against advice", "Discharged because of lack of cooperation", "Refused treatment", etc. Doubtless all these accusations are true, but do they not reflect on the physician as well as the patient? Do they not represent but another factor accompanying the make-up of the "chronic", another systemic dysfunction needing treatment? Is not the mere fact of such summary dismissal from a hospital ward, because of one of these charges, admission of failure on the doctor's part? Does it not indicate ignorance of, or failure to deal successfully with, problems of behaviour and psychoses of varying degrees? If for no other reason than this, one cannot emphasize too strongly the value of greater study and practical use of such psychotherapeutic measures ready at hand to the average practitioner of medicine. The former family doctor had not the advantage of much of our present-day knowledge, but he was ahead of us in the matter of thorough intimate understanding of his patient.

Of what use is it to cure a body if a mind is left ill? Certainly it is not enough to arrest or cure body disease if the motivation for living is ignored. Psychotherapy is stressed because in many arthritides, particularly in the so called rheumatoid, or the patient showing proliferative joint changes, the physiochemical changes in the body appear to follow psychical changes, endocrinal dysfunction ensues, and subsequently the body systems so controlled are affected insidiously. Hence if one undertakes the treatment of chronic disease he must be prepared to give the time and patience necessary to this form of treatment.

CONCLUSION

Outstanding important points emphasized in this paper, which heretofore have not been stressed sufficiently, are the following:

- 1 The possibilities for research offered to the medical profession in the arthritic field along both laboratory and clinical lines. Clinical study, such as is here presented, emphasizes the need of long-time observation of the same group of patients before accurate conclusions can be drawn. Conclusions drawn from a

composite picture made up of segments culled from different groups of patients in different decades and at different stages of disease can never be accurate.

- 2 Rest is the single outstanding therapeutic agent whose value is accepted by all. Physical and mental rest and relaxation are interdependent and are of equal importance.
- 3 Successful treatment of arthritis demands measures to relieve pain. In addition to humane considerations, the relief of pain is of primary importance because it breaks into the vicious circle by which the arthritic condition is perpetuated and facilitates the reparative processes, mental and physical. Rest, analgesics and opiates are all required in some patients to achieve freedom from pain.
- 4 To date, all roads of clinical investigation have converged at the individual and his variable reactions to heredity, nutrition, occupational hazard, weather conditions, infectious irritants (exogenous and endogenous), environment, and psychogenic factors. In one individual, one such stimulus acts as the excitator precipitating him into the arthritic syndrome, in another, the same stimulus may produce schizophrenia, or, the combination of several stimuli may be required in another to develop arthritis. The point of importance is that the individual holds the key to the puzzle, and only study, and intimate knowledge of the individual will provide the answer. Genuine psychotherapy gives the physician the knowledge, and the patient the aid, which each seeks. Though such treatment requires time, and the results seem intangible and immeasurable, the time will be well spent if definite, lasting physical results follow the recognition and restoration to normal of disturbed mental and emotional reactions.

"One of the essential qualities of the clinician is interest in humanity, for the secret of the care of the patient is in caring for the patient."¹⁰

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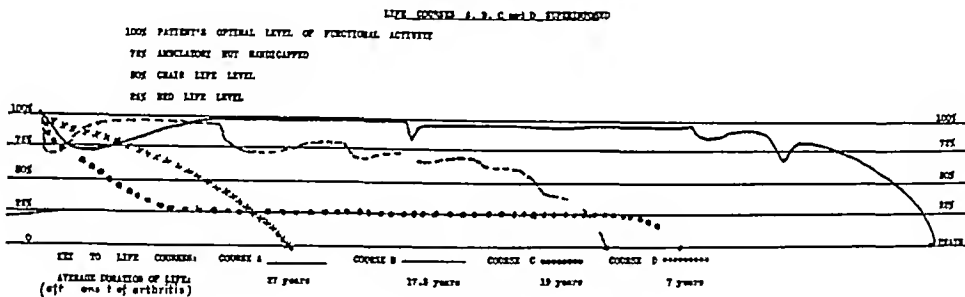
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effect in the production of arteriosclerotic changes in certain individuals. Liquid intake should not exceed six to eight glasses a day, and this amount should include fruit juices, water, soups and milk. This restriction of fluid is suggested especially in the overweight patient. Excessive liquid does not produce firm muscle, solid sound tissue, but produces an unstable labile matrix.

DEFORMITIES PREVENTION, CORRECTION AND OPERATIVE INTERFERENCE

To the orthopedic consultant falls a large and important part of the successful treatment of arthritis. On him devolves the task of preventing joint deformity if possible, correcting it when it has occurred, or if it occurs in spite of attempted prevention. The medical man's treatment of deformity consists of a few very simple things, simple because they are so obvious so far as indication is concerned, but far from simple when it comes to application and the production of results. They are usually preliminary to the

important as the operation itself, and this decision must be made by the physician who has had charge of the case, he who has knowledge of the entire picture with all its interrelated intricacies and disturbances. In this connection, an interesting point was brought out in recent study made in connection with the Robert B. Brigham Hospital Survey of Chronic Disease.⁹ The life courses followed by ninety-five dead arthritics showed four distinct and different curves. Course A represented a patient who with the onset of arthritis dropped to a lower level of activity, remained there for a time, then climbed back toward his former level and stayed at this level through the greater part of his remaining life. Course B showed a life course made up of definite periods of remission and relapse, and as the years passed, the trend gradually downwards, with lengthening and more frequent periods of relapse and shorter and fewer periods of remission. Course C showed a tremendous drop in the life line, over a variable period of time, from the expected 100 per cent of



THE FOUR TYPICAL LIFE COURSES SUPERIMPOSED ON ONE ANOTHER.

orthopedist's arrival. The first is alleviation of pain, the second, reduction of congestion and swelling, the third, maintenance of the affected joint in the best postural position possible, so that if ankylosis must occur it will at least occur in the most practical and serviceable position for the patient.

Surgery is usually necessary to correct real deformity. This in competent hands has proved of inestimable value, not only in restoring function to the particular joint operated upon, but in rehabilitation of the patient. In some instances, he may be enabled to retake his place in a competitive world, in another he may return to an ambulatory existence after years of chair life, or, in a third, he may regain only the ability to feed himself, to do small personal things with arms which had before been helpless. All these things do more than restore that particular lost function, they restore the individual's self-respect, give him back a certain degree of independence and self-respect, and at least promote partial independence. These are attributes essential to everyone's morale.

The decision as to the suitable time for such operative interference is in my opinion as im-

portant as the operation itself, and this decision must be made by the physician who has had charge of the case, he who has knowledge of the entire picture with all its interrelated intricacies and disturbances. In this connection, an interesting point was brought out in recent study made in connection with the Robert B. Brigham Hospital Survey of Chronic Disease.⁹ The life courses followed by ninety-five dead arthritics showed four distinct and different curves. Course A represented a patient who with the onset of arthritis dropped to a lower level of activity, remained there for a time, then climbed back toward his former level and stayed at this level through the greater part of his remaining life. Course B showed a life course made up of definite periods of remission and relapse, and as the years passed, the trend gradually downwards, with lengthening and more frequent periods of relapse and shorter and fewer periods of remission. Course C showed a tremendous drop in the life line, over a variable period of time, from the expected 100 per cent of

activity to a 50 per cent or 25 per cent level, because of extensive joint destruction and crippling, and the remaining life spent at this low level, often for years. Course D showed a course which progressed steadily downward to death, without appreciable remission, regardless of treatment or any one particular factor. Studies of the histories of these patients with their different reactions indicated that an individual followed a certain Life Course irrespective of age, duration of arthritic symptoms or so-called type of arthritis. The Course D group particularly demonstrated this fact. In it were patients from almost every decade of life. Both the young and the old in this group showed at death surprisingly comparable pictures in regard to age of bone and tissue, both failed equally to respond to any treatment, both made (for an arthritic) a relatively rapid journey to the grave. Operation on one in this group appeared to be a mistake, in each instance it merely hastened the patient on his downward course. Another impression, not fact, gained from the study, was that operation on an individual following Course C, if undertaken at an opportune moment, might well raise him to a modified

Tea proved a variable feast, usually being served only when there were guests. They went to bed when they were tired anywhere from 9 P M to 1 A M. They visited the toilet with complete irregularity. This irregularity of the toilet hour is an interesting phenomenon. Most fastidious people change their clothes, bathe and care for their teeth and nails according to a quite regular schedule. Yet this very essential act of elimination is left entirely to the whim and caprice of rectal sensation. Persons who work nights or who work on alternate morning and afternoon shifts are especially prone to constipation.

Gradually I formed the impression that although there are probably many factors which help to maintain constipation the chief one is lack of habit. It is at least possible that the regular daily defecation of the normal person is an example of the conditioned reflex of Pawlow. So long as the toilet visit occurs in its regular, customary place in the daily sequence, success is assured. In the constipated person there is no regular sequence. He waits until he has an imperative urge to stool and visits the toilet at very variable hours. In fact if he is taking cathartics the normal progress of his entire intestinal activity is more or less continuously upset. First he takes a chemical or mechanical irritant which lacerates his intestinal mucosa sufficiently to produce one or several loose stools and before the tract can return to its normal condition it is usually purged again.

B PLAN OF TREATMENT

In seeking to help these persons complaining of constipation this plan was followed. By dint of careful history and physical examination, including rectal examination and often a barium enema and gastro intestinal series the possibility of organic cause for their distress was ruled out as carefully as possible. The many lesions of which constipation may be a symptom have been repeatedly listed in the literature and need not be discussed again now. Two conditions which are sometimes not sufficiently considered may be mentioned. Dr E P Hayden has called to my notice the importance of rectocele as a cause of rectal constipation in women the rectum being mechanically unable to empty itself. Dr Langdon Parsons⁴, in a paper recently published has pointed out the surprising frequency with which some disturbance of bowel function is the first symptom of carcinoma of the stomach. When convinced that his symptoms were of functional origin I have then sat down with the patient and explained to him something of the physiology of the intestinal tract and the origin of most of his symptoms in irritation of the intestinal mucosa⁵. I have tried to dispel

his fear of constipation and to engage his enthusiasm and cooperation so far as possible. This step is time-consuming but I believe that it is absolutely essential. The patient will not embark on the program to be described if he does not understand and sympathize with the theory and plan of the physician. The patient has then been given written instructions as follows:

- (1) Have regular hours for sleep and particularly for rising in the morning.
- (2) Eat three meals at regular times every day with no nibbling between meals. (The menu is not stressed except to discourage the use of any excess of roughage for its laxative action.)
- (3) Drink at least eight glasses of fluids daily. (It is reasonable to suppose that if the body is not well supplied with water, relatively more fluid will be absorbed from the intestinal contents and leave them abnormally dry.)
- (4) Take at least thirty minutes of work or play daily preferably out-of-doors and sufficiently energetic to produce a little breathlessness and start palpable perspiration.
- (5) Visit the toilet for stool every day after breakfast whether any urge is felt or not. Stay there (without straining) fifteen minutes unless a thoroughly satisfactory result is achieved in less time and, when this period is over do not return until the next day at the same time if it can be avoided.

In only two instances was the above treatment modified in any way. One young woman, examined by barium enema, in spite of the usual preparation showed retention of impacted fecal balls. These were removed by repeated gentle enemata before beginning the program of habit training. I doubt if this precaution was strictly necessary but it probably spared her a few days of difficult stools before her regular habit was established. One elderly lady had considerable mucosal irritation as evidenced by excess of mucus in her stools and areas of muscular spasm of the colon which were demonstrated by the barium enema. Her progress toward a normal bowel habit was accelerated somewhat by the use of belladonna. She was given ten drops of the tincture before meals three times daily for about two weeks.

C RESULTS

Thus far there have been thirty-seven private patients who cooperated well and whom I have been able to follow satisfactorily. All are now symptom-free, most of them after only a few days to two weeks of treatment. Of patients seen in the Outpatient Department of the Massachusetts General Hospital only twenty-nine cooperated well and returned for follow-up examinations. Of these, twenty-five are now symp-

THE TREATMENT OF CONSTIPATION

BY ALLEN G BRAILEY, M D *

IT is quite probable that a greater total of impaired health is due to functional than to organic disease. Yet the treatment of functional conditions has lagged far behind that of the organic. Among the reasons for this lack of progress is the fact that it is often hard to discover the precise defect in the patient's personality, habits, or environment which cause his symptoms and, furthermore, that successful treatment requires his understanding and active cooperation, whereas the treatment of organic disease often requires only his passive assent. Thus, the correct diagnosis and treatment of acute appendicitis is not much more difficult in a person of low mentality than in the highly intelligent. The successful treatment of functional troubles is often a greater challenge to the ability, patience and ingenuity of the physician than is the dispensing of the proper remedy for better understood diseases.

Repeatedly in the history of medicine, groups of conditions have been poorly treated until one or more definite syndromes has been clearly separated from the mass and its cause discovered. For example, the group of conditions now recognized as due to hyperparathyroidism remained obscure until recent years, but now this disease is as easily diagnosed and treated as is exophthalmic goitre. In a similar way with further careful study, many functional disorders may be expected to fall into categories with relatively simple causes and yield to fairly standard treatment. The functional disorder of the gastro-intestinal tract, variously called constipation, unstable colon, unhappy colon, etc., is one such condition which I believe, is now ready for clearer understanding and more rational treatment.

A CAUSES OF CONSTIPATION

Four years ago, while working in the outpatient medical clinics of the Massachusetts General Hospital, I became impressed, first, by the large number of patients who said they were constipated, secondly, by the fact that they had usually treated their symptoms themselves or with the help of the drug clerk, and, thirdly, that we doctors, ourselves, often showed rather little interest in the complaint and had developed no generally recognized best method of treatment. The importance of constipation has been variously estimated in the past, from the view that it never leads to organic disease, to the teaching of Sir Arbuthnot Lane and his school that constipation is an important predisposing cause of such diseases as tuberculosis and cancer.

Even if one believes that constipation never causes permanent injury to the body, one must still admit that it does cause its victims a great deal of mental and physical distress, often daily and for a period of years and, therefore, it ought to have the interest of the profession.

Each person complaining of constipation was questioned as to what he meant by the term, as to the onset, duration and treatment of his complaints, and, finally, as to his daily habits of work, rest, diet, exercise and toilet. It appeared that nearly everyone meant, when he said he was constipated, that, if he stopped taking cathartics, his bowels did not move during the next twenty-four hours. He was always astonished when told, as pointed out by Alvarez¹, by Burnett² and others, that food takes from two to seven days to make the voyage of the intestinal canal in normal persons. With many of these patients, months had passed since they had given themselves an opportunity to demonstrate whether they were truly constipated. They also complained of fatigue, lack of ambition, mental depression, occasional vertigo, foul breath, eructations and abdominal distress and distention.

The time and conditions at the onset of these complaints had often been forgotten. Thaysen³, in a study of 375 constipated persons, found that the symptoms were well established before the twenty-sixth year in about three-quarters of them. When the onset could be definitely recalled, it was striking how often it appeared that their trouble began when they moved from one town to another, changed the nature of their work or were confined to bed for a time with some illness. Often they had taken laxatives daily since these upsetting events occurred.

A study of the daily habits of these patients gave interesting results. Persons who felt that their bowel action was normal and satisfactory were almost invariably found to live quite routine and scheduled lives. For instance, most business men with normal habits quite habitually rose at 7 A.M., shaved, ate breakfast, ran for the train and went to the toilet on reaching the office. Usually it would prove that lunch came regularly at 12 30 P.M., dinner at 6 P.M. and bedtime fairly regularly at 11 P.M. They often added "I sometimes have no stool on Sundays and I am apt to be constipated during vacations."

Persons with constipation, on the other hand, almost invariably gave a story of irregular days. If they had entertained late in the evening, they slept later next morning or had breakfast in bed. Luncheon at home was served at 12 30 P.M. but luncheons out were served at 1 30 or 2 P.M.

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his feet are solidly on the ground Withal he is one of the happiest and gentlest of men, who is making a high score with the Recording Angel

R B O

IN these days it is a common statement that 95 per cent of the early cases of leprosy are curable The writer has been treating leprosy for about twenty years but it was with poor success until the ethyl-ester of chaulmoogra oil became available With the preparations now procurable it is possible to do very much better than just the 95 per cent mentioned above

For convenience we may divide leper patients into four classes

(1) Early cases by which we understand those in whom the disease has gained only sufficient hold to make a certain diagnosis possible

(2) Moderately advanced cases, such as patients who can be recognized as lepers at a glance They are able to work as usual, but may have one or more ulcers They may have the so-called leonine expression, and have lost much of their eyebrows, but their activities are not yet limited by their disease

(3) Advanced cases These have huge stinking ulcers, but have no edema and can still work.

(4) Patients in the last stages In these the heart is beginning to fail, and their resistance is broken, so that they do not react to any treatment

Taking this classification, our experience during the past two years has been that 95 per cent of the moderately advanced cases and at least 75 per cent of the advanced cases are curable Those patients who are not curable are lost because of some other intercurrent disease, as malaria, pneumonia, etc

In our experience successful treatment depends on a careful study of each individual case There is no routine treatment which is the best for all Some do much better on one preparation and others on another Great care is also needed to find the optimum dosage for each patient For instance, we had one advanced case which a casual examination would place in the last stages We began with alepol, an ethyl-ester of chaulmoogra oil, put out by Burroughs, Wellcome & Co, and gradually increased the intravenous doses to 13 cc of a 3 per cent solution, once a week, which is more than twice the maximum dose recommended by the manufacturers This I further supplemented by giving him per oram another 6 cc of the same, some to be taken after each meal and mixed with enough water to last him a week He also had regular dressings for his ulcers as long as needed Ulcers 12 cm. long healed up in a little over a year The majority of patients however, cannot be given more than 10 cc once a

week, and some not more than 5 cc If the reactions are too severe they do not seem to profit by the treatment, and the dosage must be reduced before they gain Some improve faster on 6 cc than others on larger doses If they cannot bear doses large enough to make a reasonable gain, we shift to another preparation of chaulmoogra oil, or supplement the treatment by another drug The iodized ethyl-ester is extremely useful in skin lesions At a sitting ten or fifteen or even more intradermal injections, each of 0.1 cc, may be given These are very effective so that almost any skin lesion will clear up after a month or two, but without other treatment a relapse is certain to occur If larger doses of the iodized solution are given, nervous symptoms soon appear, and further treatment with it must be discontinued, or reduced and supplemented by another preparation



On this patient's hands where there is now healthy white skin, there was a mass of stinking ulcers

Everyone who treats leprosy has his own favorite drug and method We have found the alepol, given intravenously, the least painful and generally the most effective of our whole armamentarium It has the great disadvantage of obliterating the veins After a few months of treatment it becomes almost impossible to find a vein anywhere in the whole body, in which case it becomes necessary to substitute intramuscular injections, giving a series of 1 cc or less in various parts of the body, preferably near an ulcer if there is such If a patient happens to have varicose veins you are in luck so long as they last, which unfortunately is not long

It is generally stated that leper patients react badly to mercury and arsenic The contrary is true in our cases Indeed it is a frequent experience when a patient is not gaining as he should, to find that a few doses of one or the other will cause him to again begin to gain This has happened so often that we are giving more and more mercury to almost all of our leper patients It is true that many lepers are syphilitic and need mercury and arsenic for that reason, but those who are not are indubitably helped by it The

tom-free and consider themselves well. Of the remaining four, one only came to the clinic twice and there is perhaps some question whether she did faithfully carry out instructions. The other three were very nervous and emotional women with backgrounds of financial and domestic unhappiness. Even though not cured, they take only very small doses of mineral oil and feel much improved, which suggests once more that the symptoms associated with constipation are due, more often, to the irritation of repeated catharsis than to the irritation of retained intestinal contents. The nervous and emotional background of the patient⁶ is important, of course. But how often is the tendency of nervous people to constipation due to the fact that it is especially these people whose lives and habits are chronically irregular and poorly ordered?

This series of patients is too short to deserve detailed analysis. Persons of all ages are represented from the second to the eighth decades inclusive. The two oldest patients, one man and one woman, were both over seventy years of age and had both taken some cathartic regularly every night for over forty years. They were both rid entirely of their symptoms, their constipation and their pills at the end of one week. Suffice it to say that I have found no evidence, thus far, that age, duration of symptoms or previous therapy has any important effect on the results of treatment by this method. The one essential factor seems to be the willingness and the ability of the patient to cooperate faithfully in the development of a regular and normal stool habit.

I was greatly encouraged on reviewing the literature to find that this view of constipation and method of treatment are not at all new and that there are several published accounts of their successful application. So far as I can find, they were first formulated by Dr Paul Dubois of Paris in 1886 and discussed in more detail in his "Psychic Treatment of Nervous Dis-

orders" published in 1906.⁷ Dubois stated definitely that the great majority of constipated persons could be cured by this method. Lyon⁸ in 1908 acknowledged his debt to Dubois and adopted his method of treatment. Of 69 patients treated, all but one were completely cured without medicines of any kind. Marshall⁹, in a very interesting paper, referred to the work of Dubois and Lyon. His treatment is essentially that outlined above.

In spite of these satisfactory reports and of a fairly general recognition of the importance of regular habits, constipation is all too often poorly treated. It is hoped that many physicians may be encouraged to make a careful and thorough trial of this method of treatment and establish its importance by publishing their results.

SUMMARY

- 1 It is suggested that so-called constipation, not due to organic disease, is the result of lack of a regular toilet habit.
- 2 An outline of treatment based on this concept is given.
- 3 All of thirty-seven private patients and twenty-five of twenty-nine outpatients, treated in this way, were entirely relieved of their symptoms without the use of medicines, lubricants or enemata.

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NOTES ON THE TREATMENT OF LEPROSY

BY CYRIL E. BOUSFIELD, M.D.*

FOREWORD

WHATEVER difference of opinion may exist concerning the religious value of foreign missions, there can be no doubt as to the social value of the medical missionary. In remote regions where abject poverty is the lot of the masses, religion and medicine may well walk in the closest company, and serve in the most complementary manner. It has been a great privilege to know and to feel the spirit and skill of the writer of this article on the treatment of leprosy.

Dr Cyril E. Bousfield has given the best part of his life to medical service in China. He leaves his isolated and harried hospital very occasionally, and then only to learn new methods of medicine and surgery. He must practice them often in great danger. The section has been infested with bandits, and misunderstandings of the new western ways seem endless. His religion makes him unafraid, and his knowledge gives him confidence. There is no reward of acclaim or wealth. It is a service of as fine unselfishness as the world knows, demanding courage and resourcefulness, wisdom and patience. Dr Bousfield's brain contemplates and weighs, his hands do brave and delicate things,

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personal service will almost surely make a poor family doctor. Many of our leading specialists were formerly good general practitioners and then concentrated their efforts to the one branch of medicine in which they could excel and serve humanity best.

Some may think it hard to be called at night to attend the sick, but the joy the family doctor often feels when he has made such a call possibly saving a human life or relieving suffering, is well worth all the hardship, even if the small fee earned is never paid.

Early in my professional career I decided that I would rather be known as a good successful general practitioner than as a poor governor of the state. I cannot imagine any profession more self-satisfying than that of a family physician who cares for his regular families one decade after another, assisting the babies into the world, and easing the pains of the aged dying. The family doctor soon gains the love and respect of the entire family sharing with them life's joys and sorrows. Each member of the circle confides in him and seeks his advice well knowing that the one who helps to keep his body healthy and his nerves steady can be depended upon for unlimited sympathy and complete understanding.

Then, too, the practice of medicine in country districts is, I believe, more interesting in many respects than in large centers of population as the more we must rely upon our own resources the greater the challenge to our capabilities. Extremely difficult cases act upon our interest as spice in our food. Dull indeed is the day when the family doctor treats only common cases.

It is a pleasant memory to recall being summoned in the night to a home reached only over roads that were impassable except to a horse, to find there a foreign-speaking woman who had been in labor for two days attended by a so-called midwife who fled when a little hand appeared. There was no one to assist and only one small dim lamp and one rusty pan for solutions, black dirt of many weeks' or months' accumulation on body and limbs, the uterus in constant contraction and the patient refused the use of drugs or anesthetics. (The mother and baby made an uneventful recovery.)

Then again a fractured femur or shattered tibia in homes too poor to afford even hospital expenses, taxes one's skill to get perfect results with few facilities at hand with which to work.

Nor need we be offended when asked by an elderly man, living alone and too poor to pay a

veterinarian, to save the life of his only companion a collie dog with ten little puppies, by applying a cast to a badly fractured hind leg. (Most satisfactory was the result. Complete recovery of the dog and a grateful man.)

One of the most challenging realizations to the general practitioner is the fact that he must attempt to know something of every disease which afflicts the human body and that consequently he can scarcely excel in any one thing. He must therefore look around and recognize those of his colleagues in every branch of medicine who know more in their particular practice than he. (Excepting always the soul to soul relationship of a family physician and his patient.) It is the duty and the privilege of the general practitioner to seek the advice and help of the specialist in every doubtful case possible. I consider it almost criminal for a physician to continue treating a serious illness alone if he knows another who could possibly aid him if called into consultation. In addition to the direct benefit to the particular patient every such consultation can be a source of knowledge to the physician calling on a specialist for help.

However the consultant is often at a disadvantage. He may have never seen the patient before while the family doctor may have studied his patient over a long period of time. The family physician needs sufficient courage to stand up for his convictions until proved wrong.

On the other hand, the family physician should not ask those financially unable to pay for a consultation with an expensive specialist, to undertake such obligations if he believes himself capable of treating the patient, even if such treatment should come under the heading of a specialty.

The one great need of the general practitioner is to keep in touch with some hospital, to attend every medical society meeting possible to grasp every opportunity to listen to special lectures, and to never cease to be a student.

Any system of state medicine, so-called, as adopted by some foreign countries and as advocated by some here, that disturbs the relationship between the family doctor and the patient discourages the very heart and soul of many who practice medicine as the devout practice religion (in the belief that the people who are best served are those who have a family physician and allow him to guide them along the ways to health) on all of which I base my claim that the most necessary branch of the medical profession is that of a general practitioner or the so-called family doctor.

arsenic preparations used are neoarsphenamine and sulphotreparsan, and the mercury used is Burroughs, Wellcome and Co's avanyl, a mercury preparation made especially for leprosy, and Parke, Davis & Co's mercurisal, or mercuric iodide or mercurous iodide per oram. It may here be noted that when we give the pure chaulmoogra oil, we give only the very best obtainable. Years ago many of my leper patients suffered intensely and I failed because I used any oil that happened to be on the market. For some of our patients hyrganol seems best. It is a French preparation put out by Poulenc Frères, Paris. I have tried quite a few others, as sodium gynocardate, and sodium morrhuate, put out by Smith Stannistreet, Co., Calcutta, but with poor results. Recently solganol, a Ger-



This shows how the process of destruction stops and even though the ends of the fingers may be lost they heal up entirely

man gold preparation, has been very highly recommended. We have tried it out on two cases only, for it is very costly. In both, the euphoria it induced was really remarkable. The two patients were very enthusiastic about it but I could not see any improvement which would justify its continuance. Probably the ideal method would be to use it in addition to the regular drugs.

It is unnecessary to mention here the importance of ridding these patients of helminthic infestation, malaria, syphilis, etc., when present.

In China, at least, leper patients differ from

all others in many respects. They all not only have an inferiority complex, but in addition they fear the rest of their race. They are shunned and avoided till they are ready to prefer death to life. Then, as they become hardened to the attitude of others, utter indifference to all decency and respectability is liable to supervene. When an early case comes he will often throw himself at your feet, and with tears streaming down his face, implore you to save his life. When the disease has advanced, they come in a dull despair and ask you to help them, in a way that makes you think they have no hope of your being able to do so. The practice of the present Government in China, in many places of shooting all lepers, helps to aggravate their mental attitude. However as they see themselves really being healed, this is quickly changed. They get new clothes and clean themselves up till sometimes you hardly recognize your own patients.

When treatment is undertaken, success depends, at least in our experience, on a careful study of each individual case, and in making the patient feel that he is responsible for his own cure, and you are just going to help him to recover. He is warned that it will be a long, hard fight, but that he will surely win if he is willing to pay the price. They are more cooperative than most patients and more grateful for what you do for them, than any other class of patients I have met anywhere in the world. I always make it a practice to ask them carefully about the reaction to the last treatment, and about the pain, if any, caused by it. I tell them what medicine I propose to give them, and to keep in their minds the idea that they are responsible for their own cure, I ask them if they want it or something else. By this way you get them to take better care of their ulcers, diet, etc. The work is often extremely unpleasant, and the stench of the ulcers, in some of the new cases, is too horrible to describe to those who do not know of it, but it is our job, for the Master said, "Cleanse the lepers," and there is real joy in seeing a disease conquered which for ages has been esteemed incurable.

THE FAMILY DOCTOR*

BY ORAN A. MOSER, M.D.†

THE practice of medicine is one of the greatest of the professions, and the family physician is and always will remain the most necessary part of the medical profession.

As the young graduate ponders over the problem of which branch of the profession he should enter, he gives thought to the long and uncertain

*Address delivered by the retiring President of the Hartford (Conn.) County Medical Association at the one hundred and forty second annual meeting.

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hours and small fees of the general practitioner and does not find the prospect attractive. In comparison, the shorter office hours and regular routine, with larger fees, of the specialist appear more alluring. Consequently there has developed a situation in which there are too many specialists as compared with general practitioners. And yet I would not advise any young graduate to attempt to become a family physician unless he can love that branch of the profession. He who puts financial gain ahead of

believe that the psychiatrist tends to favor the prisoner, Guttmacher insists that some cases have received more severe sentences because of his report to the court. He upholds the principle of treating the criminal rather than the crime and advises indeterminate sentences. He quotes Justice Cardozo who in 1928 stated "Everyone concedes that the present definition of insanity has little relation to the truth of mental life." He pays tribute to the Briggs Law of Massachusetts which has had such a beneficial effect in doing away to a very large extent with the battle of experts. Guttmacher details the results of his examinations and gives further recommendations for dealing with medico-legal problems.

There has been further interest stirred up in the whole problem of prevention of mental and nervous disease and defect by various eugenic programs, including sterilization and birth control. It is obvious that until there is a more general agreement as to the hereditary nature of many of these conditions it will be impossible to formulate a satisfactory program for prevention. An article by A. Lewis in the *Eugenics Review* 25:79, 1933, entitled "Inheritance of Mental Disorders" claims that the manic-depressive psychoses are highly transmittable, that if one parent has the disorder one-third of the children will inherit it, whereas if both parents have the disorder two-thirds of the children will be affected, and the remaining third will be somewhat unstable emotionally. Schizophrenia is considered to be less due to hereditary factors. However, the author claims that if one parent has the disorder approximately ten per cent of the children will inherit it and forty per cent will show a schizoid type of personality, so that only half the children will be normal mentally. If both parents have schizophrenia half the children will inherit the disease and only one-fifth will be normal. Lewis does not believe that compulsory sterilization is a solution to the problem of mental disease, claiming that many apparently healthy persons will transmit the tendency, so that it is not possible to select properly those who might transmit mental disease.

The German literature, in particular, has a number of articles on this problem. With the compulsory sterilization program adopted by the German government it is obvious that there should be such discussion. Most of these articles advocate sterilization and some even recommend castration, one author advising castration of all violently insane persons with the idea that it will have a calming effect upon them. Apparently the courts in Germany have had a very conservative attitude on the subject of sterilization, and a physician performing vasectomy even with the patient's consent might be threatened with from two to ten years in the penitentiary.

There is considerable reference to the laws concerning sterilization in the United States and particularly to the practice as carried out in the State of California. On the whole it would seem that the idea of eugenic sterilization particularly for the prevention of mental disease and mental defect is being more generally approved.

There have been a number of articles relating psychiatry to the work of the general practitioner. As an example might be cited Gordon Berry's article, "The Psychiatry of Progressive Deafness" in the *Journal of the American Medical Association* for November 18, 1933, in which he points out the various difficulties of the deaf person. In the young child there is often a tendency to withdraw, to become self-centered and sensitive, and to be misjudged by parents, teachers and comrades. Many persons refuse to face the fact that they are deaf, which leads to further difficulties. An attitude of suspiciousness is easily developed under such conditions and the child tends to blame others. The author details some of the best ways of dealing with these situations. He mentions the value of certain new devices for increasing hearing, the importance of learning lip-reading and the necessity of continuing social contacts. With regard to vocational adjustment he feels that there are some types of work in which deafness is an asset rather than a liability.

The problem of alcohol and drug addiction has received considerable attention. Little new material has appeared on this subject. In general there is the continued tendency to emphasize the importance of personality study in those who use alcohol and drugs and to feel that some sort of psychological analysis is necessary in the cure of these cases. The psychoanalytic group continues to emphasize the homosexual factor as one important cause of alcoholism. In general, the attitude is that alcoholism and drug addiction are symptoms of a maladjusted personality. There is further literature on the use of insulin in the treatment of morphine addiction. Apparently this method of treatment is advocated by some writers, whereas others see little of value in it.

There have been some rather interesting articles on suicide. The article by Frederick C. Lendrom in the *American Journal of Psychiatry* 8:479, 1928-1929 entitled "One Thousand Cases of Attempted Suicide Admitted to the City of Detroit Receiving Hospital" points out that seventy-two of these cases resulted in death. Apparently suicide is attempted more often by females but with greater success by males. The greatest incidence is between the ages of twenty and thirty. Suicide is attempted much more frequently by Protestants than by Catholics. Unemployment is apparently a factor. Suicide is

MEDICAL PROGRESS

PROGRESS IN PSYCHIATRY FOR 1933

BY KARL M BOWMAN, M D *

ONE of the most important events in the field of psychiatry during the past year was the Annual Meeting of the American Psychiatric Association which was held in Boston from May 29th to June 2nd. Dr James V May, Commissioner of the Department of Mental Diseases, was president of the Association and presided at the meeting.

A new constitution was adopted by the Association which indicated some slight changes in attitude. Formerly membership had been encouraged and any physician interested in psychiatry was welcomed to membership. The new constitution allows for associate members who "shall be physicians who have had at least one year's practice in a mental hospital", members "who have specialized in the practice of psychiatry for at least three years", and fellows "who have specialized in the practice of psychiatry for at least six years".

It was felt that the Association should establish certain standards and certify individuals as qualified psychiatrists. An examining board of five fellows was appointed to pass on all applications for membership, and in addition the Association contemplates the issuing of a certificate or diploma which will be kept sufficiently difficult to obtain, to cause its possession to be regarded as of considerable value. The plans for the issuing of such certificate or diploma have not been fully worked out as yet. Back of this decision by the Association is the feeling that many persons have posed as psychiatrists who have had very inadequate training, and it was felt that either the American Psychiatric Association must come forth with definite standards or other medical organizations would take upon themselves such a function. It is quite possible that this issuing of the diploma or certificate will be carried out in cooperation with other organizations, as for example, the American Medical Association.

Of equal interest was the Conference on Psychiatric Education which was held for two days preceding the meeting of the American Psychiatric Association under the auspices of the National Committee for Mental Hygiene. This conference was presided over by Dr C Macfie Campbell, Professor of Psychiatry at the Harvard Medical School, and some twenty-eight psychiatrists, most of them professors of psychiatry in medical schools, attended. This conference discussed the undergraduate and grad-

uate teaching of psychiatry. It was the feeling of this group that definite standards for higher qualifications in psychiatry should be worked out, and the idea of awarding a diploma in psychiatry was endorsed. It was felt that candidates for such a diploma should have had at least one year's internship in an accredited general hospital, three years' study in or under the auspices of an accredited mental hospital, and three years' additional experience as a minimum requirement for examination for a diploma.

The teaching of psychiatry in the undergraduate courses in medical schools was discussed and various members gave their views as to the best method of teaching psychiatry. It was agreed that the psychological and psychiatric viewpoint of human behavior at all age levels should be introduced in the pre clinical years in the medical school curriculum, and that clinical psychiatry should be further developed in many of our medical schools.

Of interest along the same line is a pamphlet of some fifty-eight pages entitled "Psychiatry in Medical Education" by Ralph A Noble, M.D. published by the National Committee for Mental Hygiene. This pamphlet summarizes the findings of Dr Noble after spending two years studying the teaching of psychiatry in this country. There is a careful description given of the method of teaching employed at nine of the leading medical schools of the country.

A further article dealing with this same topic is entitled "Preparation for Psychiatry" by Adolf Meyer in the *Archives of Neurology and Psychiatry* 30 1111, 1933. Meyer insists that the domain of psychiatry is the study and treatment of all abnormal conditions involving man's behavior. He gives in considerable detail the method of instruction which he regards as most desirable and details some of his own formulations of psychiatric conceptions.

In the field of forensic psychiatry we find constant emphasis on the difficulties of reconciling the medical and legal points of view with some suggestions as to improving general conditions. One article of particular interest is entitled "Psychiatry and the Courts" by Manfred S Guttmacher appearing in the *American Journal of Orthopsychiatry* for April, 1933. Dr Guttmacher, after two years' experience as psychiatrist for the Supreme Court of Maryland, discusses many of the difficulties. He feels that psychiatry deals with personalities while the law deals with generalizations. Although many

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believe that the psychiatrist tends to favor the prisoner, Guttmacher insists that some cases have received more severe sentences because of his report to the court. He upholds the principle of treating the criminal rather than the crime and advises indeterminate sentences. He quotes Justice Cardozo who in 1928 stated "Everyone concedes that the present definition of insanity has little relation to the truth of mental life." He pays tribute to the Briggs Law of Massachusetts which has had such a beneficial effect in doing away to a very large extent with the battle of experts. Guttmacher details the results of his examinations and gives further recommendations for dealing with medico-legal problems.

There has been further interest stirred up in the whole problem of prevention of mental and nervous disease and defect by various eugenic programs, including sterilization and birth control. It is obvious that until there is a more general agreement as to the hereditary nature of many of these conditions it will be impossible to formulate a satisfactory program for prevention. An article by A. Lewis in the *Eugenics Review*, 25:79, 1933, entitled "Inheritance of Mental Disorders" claims that the manic-depressive psychoses are highly transmittable, that if one parent has the disorder one-third of the children will inherit it, whereas if both parents have the disorder two-thirds of the children will be affected, and the remaining third will be somewhat unstable emotionally. Schizophrenia is considered to be less due to hereditary factors. However, the author claims that if one parent has the disorder approximately ten per cent of the children will inherit it and forty per cent will show a schizoid type of personality, so that only half the children will be normal mentally. If both parents have schizophrenia half the children will inherit the disease and only one-fifth will be normal. Lewis does not believe that compulsory sterilization is a solution to the problem of mental disease, claiming that many apparently healthy persons will transmit the tendency, so that it is not possible to select properly those who might transmit mental disease.

The German literature, in particular, has a number of articles on this problem. With the compulsory sterilization program adopted by the German government it is obvious that there should be such discussion. Most of these articles advocate sterilization and some even recommend castration, one author advising castration of all violently insane persons with the idea that it will have a calming effect upon them. Apparently the courts in Germany have had a very conservative attitude on the subject of sterilization, and a physician performing vasectomy even with the patient's consent might be threatened with from two to ten years in the penitentiary.

There is considerable reference to the laws concerning sterilization in the United States and particularly to the practice as carried out in the State of California. On the whole it would seem that the idea of eugenic sterilization particularly for the prevention of mental disease and mental defect is being more generally approved.

There have been a number of articles relating psychiatry to the work of the general practitioner. As an example might be cited Gordon Berry's article, "The Psychiatry of Progressive Deafness" in the *Journal of the American Medical Association* for November 18, 1933, in which he points out the various difficulties of the deaf person. In the young child there is often a tendency to withdraw, to become self-centered and sensitive, and to be misjudged by parents, teachers and comrades. Many persons refuse to face the fact that they are deaf, which leads to further difficulties. An attitude of suspiciousness is easily developed under such conditions and the child tends to blame others. The author details some of the best ways of dealing with these situations. He mentions the value of certain new devices for increasing hearing, the importance of learning lip-reading and the necessity of continuing social contacts. With regard to vocational adjustment he feels that there are some types of work in which deafness is an asset rather than a liability.

The problem of alcohol and drug addiction has received considerable attention. Little new material has appeared on this subject. In general there is the continued tendency to emphasize the importance of personality study in those who use alcohol and drugs and to feel that some sort of psychological analysis is necessary in the cure of these cases. The psychoanalytic group continues to emphasize the homosexual factor as one important cause of alcoholism. In general, the attitude is that alcoholism and drug addiction are symptoms of a maladjusted personality. There is further literature on the use of insulin in the treatment of morphine addiction. Apparently this method of treatment is advocated by some writers, whereas others see little of value in it.

There have been some rather interesting articles on suicide. The article by Frederick C. Lendrom in the *American Journal of Psychiatry*, 8:479, 1928-1929 entitled "One Thousand Cases of Attempted Suicide Admitted to the City of Detroit Receiving Hospital" points out that seventy-two of these cases resulted in death. Apparently suicide is attempted more often by females but with greater success by males. The greatest incidence is between the ages of twenty and thirty. Suicide is attempted much more frequently by Protestants than by Catholics. Unemployment is apparently a factor. Suicide is

most commonly attempted in the evening and at the week-end, especially Sunday or Monday. Poisoning was the most common means attempted, and tincture of iodine was the drug most commonly used.

Of considerable interest is an article by Leo Kanner in the *American Journal of Psychiatry*, 8: 171, 1933, entitled "The Significance of the Complaint Factor in Child Psychiatry." Kanner points out that to write down the abbreviated complaint in the record often is to miss the essence of the case. The apparently irrelevant remarks by the parent in connection with the problem often give the clue to the whole situation. This article merits reading by all physicians, but particularly by the pediatricians.

No important new theories concerning mental disease have come out during the past year. Bancroft's theory of colloidal dispersion and the use of sodium rhodanate and sodium amylal has attracted very little attention, and the articles published all indicate that this theory seems inadequate to explain the mental disorders. In the treatment of mental diseases we find that there is continued interest in the use of carbon dioxide and sodium amylal. It seems to be generally agreed that temporary improvement may follow the use of these two methods but that no permanent cure will be achieved. The articles discussing the removal of foci of infection and the use of endocrines are largely repetitions of material which has already been published. Further studies into the nature of the schizophrenic process indicate that there may be certain physiological variations occurring with this disease but so far nothing has been discovered which gives any clue as to the etiology.

The treatment of neurosyphilis by fever therapy and arsenic is now considered a reasonably

satisfactory method. It appears that the best results are obtained by the use of malaria and tryparsamide. Rat-bite fever and diathermy are less satisfactory than malaria, although they may be preferred for certain selected cases. There has also been considerable use of quite simple methods of causing fever such as hot baths, injection of foreign proteins and the electric blanket. By the use of malaria and tryparsamide a fair percentage of cures is being obtained by various groups so that it seems fair to expect that approximately one-third of the cases treated by this method will recover to a sufficient degree that they can go out into the community and become self-supporting. When one realizes the pessimistic attitude of twenty years ago or even later, it will be seen what marked advance has taken place in the treatment of this disorder.

The psychoanalytic group have continued to publish a great deal of material, but there have been no really new variations in the psychoanalytic theories. Of considerable interest is an article by Leo Kessel and Harold T. Hyman in the *Journal of the American Medical Association*, November 18, 1933, entitled "The Value of Psychoanalysis as a Therapeutic Procedure." In this article thirty-three cases treated by psychoanalysis are studied. In approximately half of these cases no benefit was obtained, and the authors conclude that persons suffering from a definite psychosis or persons over forty years of age are not likely to benefit by this method of treatment. Slightly more than half of the total number of cases treated were benefited. In five cases, or fifteen per cent, it was felt that the patient was definitely cured by psychoanalysis. In the remaining fifteen cases it was felt difficult to decide how much the improvement was due to psychoanalysis and how much to other factors.

A TRUST FUND FOR THE HEBREW UNIVERSITY

A trust fund of approximately \$200,000 (£39,000) has been created by anonymous donors to be used over a period of ten years for the establishment and maintenance of a department at the Hebrew University for research into the causes and cure of cancer, according to an announcement made by Dr. Judah L. Magnes, Chancellor of the Hebrew University in Jerusalem at the conclusion Sunday May 13, of a series of conferences with the American members of the Board of Governors of the University. Dr. Magnes announced that it is the intention of the University to use part of the available funds for the erection and adequate equipment of special laboratories at the University.

The plan worked out by the Hebrew University provides for research in radio-biology, physiological chemistry and the study of cells and tissues.

The University proposes to begin its work in cancer research in those fields in which the material at hand is sufficient to place the laboratories on a level with similar scientific institutions in Europe and America," said Dr. Magnes.

The study of the cell and that of physiological chemistry have become indispensable for the investigation of the nature of carcinoma and its manifestations in the diseased organism according to a statement by Professor Ludwig Halberstaedter, internationally recognized as an expert in the treatment of malignant tumors, who is now in charge of the station for cancer therapy at the Rothschild Hadassah Hospital in Jerusalem. He brought with him to Palestine a supply of radium amounting to about two hundred milligrams. Dr. Georg Goldhaber of Berlin has already been appointed to assist Professor Halberstaedter in his researches. Dr. Goldhaber is attached to the University's Institute of Physics.

CASE RECORDS of the MASSACHUSETTS GENERAL HOSPITAL

ANTE MORTEM AND POST MORTEM RECORDS AS USED
IN WEEKLY CLINICAL PATHOLOGIC EXERCISES

EDITED BY RICHARD C. CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 20211

The following case is the third in the group of which the first two cases were published last week.

PRESENTATION OF CASE

A fifty-three year old Canadian pattern maker entered complaining of abdominal pain and constipation of three weeks' duration.

Three weeks before admission he began to notice indigestion. This was characterized by a sensation of heaviness and discomfort in the epigastrium. Associated with this was mild constipation. After he had taken some pills given by a physician the attack cleared up. There had been no nausea, vomiting or severe abdominal pain with this attack. One week later he experienced severe abdominal cramps radiating across his abdomen from his umbilicus to the small of his back. The pain came on slowly, was persistent but varied in severity. He had several severe attacks every day until admission. During the two weeks before admission he ate very little. His bowels moved practically every day, although the movements were small. Two days before admission he took an enema which was followed for the next two days by more severe cramps than he had had before. The day before admission he vomited. He had no distention, jaundice or tarry stools. There had been no exposure to lead.

His general health had been very good. He had an appendectomy sixteen years before admission. The following year he had pneumonia.

His family and marital histories are non-contributory.

Physical examination showed an undernourished man lying quietly in bed in no discomfort. Both supra- and infraclavicular fossae were very prominent. Examination of the chest showed a circumscribed area of impaired resonance on the right posteriorly from the fifth to the ninth vertebral spaces. There was slightly diminished vocal resonance in this same area. There were no râles. The abdomen was moderately distended, voluntarily spastic but not tender. Peristalsis was hyperactive. There were no masses. Rectal examination was negative.

Examination of the urine was negative. The blood showed a red cell count of 5,500,000, 80

per cent hemoglobin, and a white cell count of 11,300 with 89 per cent polymorphonuclears. The stools were of liquid consistency, contained much mucus and starch, and were guaiac-negative. The non-protein nitrogen was 27 milligrams. The chlorides were 599 milligrams.

X-ray examination showed that the diaphragm, the costophrenic angles and the lung fields were clear. A gastro-intestinal series showed some spasm in the prepyloric area. The duodenal cap showed a slight irregularity which was not definite enough to warrant a positive diagnosis of ulcer, but was quite suggestive. The six-hour examination showed no gastric residue. A barium enema was negative.

Three days after admission operation was done. Following it the patient had mild abdominal pain. There was no vomiting or coughing. He died two days later.

X-RAY INTERPRETATION

DR. GEORGE W. HOLMES: The films taken of this patient's chest show a condition which we often see and about which we never feel quite certain. Notice the extremely small heart shadow. I do not know whether this is due to rotation of the heart so that we are looking at it in the transverse position or whether these patients actually have small hearts. It is a problem of some interest. The lung fields are very large and appear as though he had a moderate degree of emphysema.

In regard to the films of the stomach, I cannot add anything to what has already been said.

FURTHER HISTORY

The preoperative diagnosis was partial intestinal obstruction. An exploratory laparotomy was performed. A right paramedian incision was made between the old scar and the midline. There were no adhesions to the under surface of the previous scar, but a loop of ileum was angulated and stuck to the posterior wall of the abdomen to an extent which seemed sufficient to produce an obstruction. This was freed. The colon was palpated through its entire extent. Lumps of barium were present from the splenic flexure downward but none proximal to it. The stomach was palpated and visualized, and so far as could be determined was negative. The esophageal opening in the diaphragm was palpated but nothing abnormal was noted. There were adhesions from the gall bladder to the duodenum but the gall bladder felt soft and flexible and contained no stones so far as could be told. One small adhesion was cut. The appendix stump could be seen and was not adherent. The right inguinal ring was palpated, no evidence of a sac could be felt. The ileum was searched for a Meckel's diverticulum but none was found. The abdomen was sutured without drainage.

DIFFERENTIAL DIAGNOSIS

DR EDWARD L. YOUNG, JR. "Three strikes and out" Two strikes so far, and as I read this case history I can't quite see a home run. I expected not to know what was found at operation, but I do not see that having it I am much farther along.

The duration of symptoms, the fact of a previous operation with the possibility of adhesions and the type of symptoms which he is having all point toward a subacute intestinal obstruction. On the other hand, we are not told that pain is precipitated by the intake of food, which is apt to be true of the partial obstructions. Moreover, except on one occasion, he did not have nausea, which is generally present in partial obstruction. The other causes of abdominal pain were apparently considered and ruled out so far as possible. They mention in particular the study of lead colic and the study of the cardiac condition. There is no evidence of a small epigastric hernia which may be present, difficult to recognize, and which gives pains similar to these. The intermittent character of the symptoms suggests a chronic intussusception which, though rare, does occur, but here again there should be some evidence of it either in a positive guaiac or intermittent nausea or a palpable mass. I do not see any indication in the story to point toward any other lesion such as, for instance, duodenal or gastric ulcer, gastric cancer would seem to be ruled out by the short story, by a good hemoglobin and red cell count. So that it seems to me to come down to the question whether the patient has enough symptoms to justify operation. This was apparently so, and it seems to me that the preoperative diagnosis will have to be probable subacute intestinal obstruction, but a careful exploration must be done if, as I expect, a definite obstructive point is not found.

As regards his death, I see nothing here to tell us why. So far as they give us any evidence of any other system of organs, they are normal, the non-protein nitrogen is where it should be, and nothing else is given us that is out of line. I must confess that I cannot make an absolute diagnosis. I apparently have followed very much the same line of reasoning that went on in the minds of those in charge of the case. It seems to me that the only way to handle it was an exploration. The only justification for making a diagnosis of mesenteric thrombosis is the bad company that we are in, as the other two cases had it. From the description and the operation I cannot quite tell whether what they found would justify a very optimistic opinion as to the causative relation of what they found to the symptoms. It is too often true that "the wish is father of the thought." Logically and on the theory of chances, this patient had a cause of subacute intestinal obstruction which

was searched for but not found. He died as a result of one of the terminal accidents, an atypical embolus or peritonitis or possibly a mesenteric thrombosis.

CLINICAL DIAGNOSES

Subacute intestinal obstruction.
Generalized peritonitis.

ANATOMIO DIAGNOSES

Pylethrombosis with extension to the major divisions of the portal system, including the splenic division.
Gangrene of the small bowel.
Infarcts of the liver and total infarction of the spleen.
Generalized peritonitis.
Mural thrombus of the abdominal aorta, celiac axis orifice.
Operative wound, freeing of adhesions in the right iliac fossa.
Purulent pericarditis.
Arteriosclerosis, slight aortic and coronary.
Chronic pleuritis, bilateral.

PATHOLOGIC DISCUSSION

DR TRACY B. MALLORY This patient also died of mesenteric thrombosis. In contrast to the first two cases—you remember each of those had a very fulminating onset with a rapid appearance of prostration and shock—this man had over two weeks of symptoms of a relatively mild character. I believe one almost always thinks of mesenteric thrombosis in terms of fulminating disease and overlooks the possibility of the slowly developing case. In this case the portal vein and the splenic vein contained old grayish white thrombi which must have been present for a matter of two or three weeks at least. He had had them long enough so that he was beginning to develop a compensatory circulation between the spleen and the gastric plexus. There were large veins running from the hilus of the spleen to the greater curvature of the stomach, if he had survived a few weeks or months longer he would have had well developed esophageal varices, and might eventually have died from the rupture of one of them. The collateral circulation, however, had failed to develop rapidly enough to prevent total infarction of the spleen. The thrombi also extended well up into the portal branches in the liver, and there were multiple infarcts of the liver, which is a relatively uncommon lesion.

In all three of these cases I think it almost impossible to make a diagnosis from the history. The one person who could have made the diagnosis was the operating surgeon. It seems to me that a more careful exploration of the abdomen might have established the diagnosis in each of these cases. I do not know how great

the change in appearance was between the time of operation and the time of autopsy. Undoubtedly the frank gangrene we found postmortem was not present at the time of operation, but I think that the swollen cords of the veins could have been felt in two cases and the absent pulsation in the artery in the third case; if the patients were in good enough condition to permit of reasonably thorough examination, which may not have been the case.

DR YOUNG: Was there any fluid reported in any of these cases, particularly this last one?

DR MALLORY: It was present at the time of autopsy, but not at operation.

DR YOUNG: Because it should have been in the abdomen at the time of operation. Was it, Dr Boyden?

DR A. M. BOYDEN: No.

DR HOLMES: Was there any change in the heart?

DR MALLORY: The heart was a small one, Dr Holmes. It weighed 275 grams, which would be normal for a woman, but is definitely small for a man of fifty.

A SURGEON: You do not recall how much free fluid there was in the abdomen in this last case, do you?

DR MALLORY: About a liter and a half, hardly enough to pick up clinically.

DR HOLMES: During the acute attack would not the small bowel be paralyzed?

DR MALLORY: The actual area of involvement almost certainly would have been the segment above might well be spastic, however.

DR HOLMES: It seems to me if we had taken a plain film of the abdomen when the patient was acutely ill we might have shown the presence of gas and the absence of normal peristaltic formation in the small bowel and perhaps have made the diagnosis.

A PHYSICIAN: Do we know what the white cell counts were?

DR MALLORY: In general low, in the last case 11,000. In the first case it was 12,000 and in the other case about 17,000.

CASE 20212

PRESENTATION OF CASE

A thirty-four year old single white American was brought into the Emergency Ward in coma.

The day before entry his companion noted that the patient's speech suddenly became very thick and that he had a peculiar look on his face. He made him sit down and called for help. By this time the patient was unconscious and it was noted that his left side was stiff and motionless. He was taken home and put to bed. There he responded to questions and it was noted that the left side of his face was paralyzed.

He lapsed into a semistuporous state, in which he remained.

He had always been strong and healthy. Fourteen years before entry he passed a kidney stone. One month before entry he complained of dizziness and remarked that he probably needed glasses.

Physical examination showed a well nourished, plethoric young man in coma and incontinent. The pupils were small and reacted to light. The fundi were slightly choked and showed marked nicking of the veins. The heart was not enlarged. There were no murmurs. The blood pressure was 190/100. The left side was motionless. The reflexes were greater on the left than on the right, but were hyperactive on both sides. There was left patellar and ankle clonus and a bilateral Babinski.

The temperature was 102°, the pulse 120. The respirations were 28.

Examination of the urine was negative. No examination of the blood was done.

Lumbar puncture performed at half-past five p.m. on the day of admission showed an initial pressure of 400. The fluid was grossly bloody. After withdrawal of 50 cubic centimeters the pressure went down to 180. The fluid showed a negative Wassermann, total protein 34S, colloidal gold 3445555551, sugar 187, chlorides 743. Another lumbar puncture was performed at eight p.m. that same day. The fluid was also grossly bloody. The initial pressure was 250, falling to 150 after withdrawal of 10 cubic centimeters. Two more lumbar punctures, one performed at midnight and another the following day, both gave grossly bloody fluid under a pressure of 350.

DIFFERENTIAL DIAGNOSIS

DR. HENRY R. VIETS: The striking thing about this case is the fact that a young man of thirty-four, previously entirely well except for a kidney stone, suddenly became semistuporous and ultimately went into coma. At the same time there were signs indicating a hemiplegia on the left side. Naturally, in view of this onset, one thinks of an intracranial vascular accident. The suddenness of onset might lead one to think of embolus did we not know about the spinal fluid, which showed gross blood and thus was distinctly unfavorable to that diagnosis.

The patient may have had a brain tumor with a hemorrhage into it. He had, however, no signs of increased intracranial pressure and there was nothing in the previous history to suggest tumor of the brain. We know, moreover, that hemorrhage into brain tumors, giving what appears to be a sudden onset, is not nearly so common as it was previously considered to be.

The history, therefore, of this young man speaks very strongly for a vascular lesion. It might be due to a cerebral artery disease.

eurysm, arteriosclerosis, or vascular lues. The possibilities of all three must be considered.

We did not know until the examination took place whether the man had lues or not. The negative findings in the spinal fluid and the negative blood Hinton were strong evidence against it and I do not believe we can consider his condition on that basis.

The examination gives some evidence of arteriosclerosis, especially the examination of the fundi. There was definite nicking of the veins when the arteries passed over them, a condition not usually seen in a man as young as this. The patient also had a hypertension, at one time the blood pressure was 190/100 and at another the systolic pressure was 180. In spite of these two findings it does not seem to me likely that we are dealing with a case of ordinary rupture of an arteriosclerotic vessel. This opinion is largely based upon the age of the patient, although such a diagnosis could not be ruled out entirely from the history alone.

Rupture of an aneurysm is a much more common finding, and the history of the sudden onset in this man seems to be entirely consistent with this diagnosis. The gross blood in the spinal fluid on repeated examination and the fact that he survived only a short time are also consistent with the diagnosis. The hemiplegia might easily be due to an aneurysm if the defect in the vessel happened to lie in a place that would allow blood to spread over the cortex of the brain on the right side. There is a possibility, however, that a lesion deeper in the brain, which would also give hemiplegia, will be the underlying pathologic finding. We do not have a history of progressive hemiplegia and therefore the site of the lesion is or near the internal capsule, giving a complete hemiplegia suddenly, is most likely. On the other hand we have to account for the gross blood in the cerebrospinal fluid, which can only be found when the lesion is in or near the subarachnoid space. I should think, therefore, from the history and from the examination one would strongly suspect a ruptured aneurysm on the right side of the brain, giving the sign of left hemiplegia, or possibly a subcortical hemorrhage, perhaps due to aneurysm giving much the same picture. This syndrome, if I am correct about the aneurysm part of it, has not been uncommon.

FURTHER HISTORY

DR W. JASON MIXTER. The day following admission a subtemporal decompression was performed. A two and a half inch vertical incision was made in front of the right ear. Fibers of the temporal muscle were split and a moderate sized subtemporal decompression was done. The brain bulged strongly into the wound and no blood clot could be seen. The inferior horn was tapped in the temporal lobe and slightly bloody spinal fluid withdrawn. That fluid was much

less bloody than the fluid obtained by lumbar puncture previously. This did not seem to bring down the pressure very much. The posterior portion of the frontal lobe was then explored with the ventricular needle and a large amount of old fluid blood was evacuated. As I remember it, this was about three centimeters deep at the upper part of the subtemporal decompression. This brought the pressure down some where near normal. The needle was withdrawn, the tract was somewhat dilated and a small rubber drain was placed to the hemorrhagic cavity. The wound was closed in layers with silk.

The brain was placed in the cavity on account of the fact that there still seemed to be some blood oozing from the cavity and it seemed wiser to do that in order to prevent reaccumulation. The operation lasted approximately fifty minutes.

The preliminary diagnosis was spontaneous intracranial hemorrhage. The postoperative diagnosis was intracerebral hemorrhage with right subtemporal decompression and evacuation of clot.

That evening a lumbar puncture showed anochromic fluid. He was given intravenous glucose, but rapidly failed, did not regain consciousness and died.

FURTHER DISCUSSION

DR JAMES B. AYER. I want to say that if this is intracerebral hemorrhage it has not been usual to find aneurysm as the cause. The hemorrhages from aneurysms are usually at the base of the circle of Willis, which would indicate that we had a communication with the ventricles here. I do not think that we have as yet any reason to say we have any pathology back of it. One would think more of hypertension than of anything else, even though it be a young man. Trauma will do that sort of thing, give a perfectly typical history like this, and although we have no history of trauma, he may have had a trauma that has not been recognized and has given no outward evidence.

DR MIXTER. We had a pretty good history, and I do not believe there was any trauma. The blood seemed to be directly in the subcortical brain substance, very possibly near the ventricle, and definitely not in the subarachnoid space.

DR TRACY B. MALLORY. Under what conditions would you operate on a case of cerebral hemorrhage?

DR MIXTER. The reasons for operating in this case were to my mind about as follows. In the first place here was a man getting rapidly worse, whose pressure and symptoms were not controlled by lumbar puncture, with a definite localization to the right side. We did not know whether we were dealing with a subarachnoid hemorrhage, a subdural hemorrhage or a subcortical hemorrhage. I think that operation, craniotomy and exploration, under these cir-

circumstances are perfectly proper. I think the expectation of getting very much relief from evacuation of subcortical clot is not so good as when we have fluid blood on the surface. At the same time I see no reason why a subcortical clot which is causing marked compression might not be so operated upon with relief of symptoms. I should say, although I am not sure, that this lesion was probably in the neighborhood of the anterior cerebral artery or one of its branches.

DR MALLORY: One of the interesting points in this case, of course, is the blood pressure. It is known that an elevation of cerebrospinal pressure can produce an elevation of blood pressure, but not so definite a hypertension as this. Do you know the figures, Dr. Ayer?

DR AYER: No, but you are perfectly correct.

DR MIXTER: Another point is that the hypertension of increased intracranial pressure is increased in systole without much in diastole. This man had a diastolic of 100.

DR MATRICE FREMONT-SMITH: How much emphasis can be put on the absence of headache in a man who has a pretty good history and in whom you are trying to rule out the presence of subarachnoid hemorrhage?

DR MIXTER: I do not know. This came on rather suddenly. He went into coma pretty rapidly.

CLINICAL DIAGNOSIS

Subarachnoid hemorrhage

ANATOMIC DIAGNOSES

Cerebral hemorrhage

Cerebral arteriosclerosis

Multiple cerebral infarcts

Operative wound subtemporal decompression, right

PATHOLOGIC DISCUSSION

DR MALLORY: Our autopsy was limited to the head and Dr. Kubik will tell us about that.

DR CHARLES S. KUBIK: There is a hemorrhage which involves a large part of the right frontal and parietal lobes and has broken through into the lateral ventricle. It probably comes from one of the lenticulostriate arteries which may be seen entering the cavity resulting from the hemorrhage. The main cerebral arteries are thickened so that they do not collapse and there is some but not very extensive, atheromatous degeneration.

Microscopic sections reveal sclerosis not only of the main arteries and of the lenticulostriate and other small arteries within the substance of the brain but of the arterioles as well. There is further evidence of vascular disease in the form of tiny foci of degeneration in the cerebral cortex, the subcortical white matter and in the cerebellum.

DR MALLORY: I think with the anatomic findings in spite of the fact that we were limited to the brain that we are pretty safe in assuming that the underlying disease here was hypertension with marked arteriosclerosis and arteriolar sclerosis.

Dr. Mixter has just said that for at least five years previous to this acute episode the patient had not had a physical examination or a blood pressure reading, so we do not know how long he had had hypertension, very possibly for a considerable period.

DR VIETS: May I say just one word? It is possible now that we know the pathologic diagnosis that we should have paid a good deal more attention to the nicking of the vessels in the fundus in this young man. One would have expected to find, however, more signs of generalized arteriosclerosis than would be indicated by this single examination. The vessels of the retina often give a very good picture of the vessels of the cerebrum and that finding alone should have led us to suspect arteriosclerosis, and to have given more weight to that diagnosis.

The New England Journal of Medicine

SUCCESSOR TO
THE BOSTON MEDICAL AND SURGICAL JOURNAL
Established in 1828

Published by THE MASSACHUSETTS MEDICAL SOCIETY
under the jurisdiction of the

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SUBSCRIPTION TERMS \$6.00 per year in advance postage paid
for the United States Canada \$7.04 per year \$8.52 per year
for all foreign countries belonging to the Postal Union

Material for early publication should be received not later
than noon on Saturday. Orders for reprints must be sent to
the Journal office 8 The Fenway

The Journal does not hold itself responsible for statements
made by any contributor

Communications should be addressed to The New England
Journal of Medicine 8 The Fenway Boston Mass

The Massachusetts Medical Society

THE SCIENTIFIC EXHIBITS OF THE ANNUAL MEETING

THE Scientific Exhibits of the Massachusetts Medical Society have always been a valuable part of the Annual Meetings, and in recent years they have been attracting a steadily increasing amount of interest. This is not strange when we realize that each exhibit offers in graphic form the concentrated results of months and years of someone's intensive work.

It requires no great gift of imagination, while standing before such an exhibit, to see the various specimens and charts dissolve, like something in a movie fadeout, and in their place to picture our colleagues in laboratories, operating-rooms and hospital wards, gradually collecting the bits of information which, pieced together, will make tomorrow's knowledge of disease. After this vision we stand appalled by the mass

of effort that can be crowded into one small booth.

The advanced program already published* gives promise of an unusually valuable collection of exhibits for the June meeting in Worcester. Some of them will later be shown at the Century of Progress in Chicago. They will all contain information which we as members of the medical profession cannot afford to pass by. The Society owes a great debt of gratitude to the exhibitors, not only for their scientific accomplishments, but also for their willingness to lay before us the results of their labors.

*New Eng J Med 210 1043 (May 17) 1934

THE TYPHOID FEVER EPIDEMIC IN MAINE

FOR several years the opinion has been growing that typhoid fever no longer exists as a major menace to human life. Unfortunately our careless typhoid carrier may be the cause of a serious epidemic.

This was well shown in a report to this *Journal* by Dr. G. A. Coombs of 283 Water St., Augusta, Maine, who in addition to a large surgical practice is a part-time health officer. The report in the daily papers that the first case of typhoid fever in Augusta, Maine, was made ill by drinking water from the Kennebec river has not been proved, although suspected.

A brief report of the epidemic referred to is that the first case discovered was a boy who had been ill for about ten days before he was attended by a physician. The father of this boy took care of him and helped in the milking of cows on the dairy-farm. The milk was found to be distributed to thirty-seven families and two grocery stores, all being in the French section of the city.

Because of the likelihood of many infected persons, free anti-typhoid inoculations were provided for the whole city. In order to carry out this plan, nurses and a physician were provided by the State and during fifteen days more than 7,000 people were given anti-typhoid treatment at the free clinics. The physicians of the city gave the treatment to many private patients so that more than 8,500 persons were so treated. In addition all food handlers in the city, including milk dealers, were given physical examinations and specimens of urine and feces of all such were examined in order to check possible typhoid carriers.

About 65 cases with five deaths was the record of the epidemic. Seven of the cases and two of the deaths were in the family of the milkman where the original case occurred. Up to April 28 no new cases were reported. The health authorities were aided by the Augusta General Hospital where accommodations were provided for dealing with the patients.

Here is a brief recital of an epidemic of typhoid fever with its source recognized as promptly as possible under the circumstances, and fought efficiently. Of the way it was handled there seems to be no ground for criticism, but may not this episode be a strong argument for compulsory pasteurization of milk which may at any time be a serious menace to health if used in its raw state?

AN APPEAL FOR A SECTION OF DERMATOLOGY AND SYPHILOLOGY

On page 1136 there appears an appeal for the formation of a Section of Dermatology and Syphilology of the Massachusetts Medical Society.

Section 5 of Chapter IV of the By-Laws of the Society provides that, "The Council may vote to establish Sections for the consideration of scientific papers at the annual meetings of the Society and shall appoint the first chairman and secretary of a new Section so established."

This appeal which is signed by ten Fellows of the Society if presented at the Council meeting, merits consideration.

Intimation that the State Department of Public Health is also favorably disposed to the creation of this Section, lends weight to the movement.

Even though there have been expressed opinions favorable to curtailing the section activities in favor of general meetings, thereby eliminating competition regarding the conflicting time of different sections, this letter signed by prominent dermatologists must be given due consideration.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors

COTTON, FREDERIC JAY A.B. A.M. M.D. Harvard University Medical School 1894. F.A.C.S. Consulting Surgeon Boston City Hospital, Faulkner Hospital, Newton Hospital, New England Hospital for Women and Children, Chelsea Memorial Hospital and Cape Cod Hospital Hyannis. His subject is "Notes on Giant-Cell Tumors of Bone and Cysts." Page 1095. Address 520 Commonwealth Avenue, Boston, Massachusetts.

TAYLOR, GRANTLEY W. A.B. M.D. Harvard University Medical School 1922. F.A.C.S. As-

sistant Surgeon to Out-Patients, Massachusetts General Hospital. Surgeon to Out-Patients, Collis P. Huntington Memorial Hospital, Boston. Assistant Surgeon, Pondville Hospital, Norfolk. His subject is "Cancer of the Mouth in Women." Page 1102. Address 264 Beacon Street, Boston, Massachusetts.

WILKINSON, S. ALLEN A.B. M.D. University of Pennsylvania School of Medicine 1925. Department of Gastro-Enterology, Lahey Clinic. His subject is "Diaphragmatic Hernia." Page 1105. Address 605 Commonwealth Avenue, Boston, Massachusetts.

NISSEN, H. ARCHIBALD A.B. M.D. Harvard University Medical School 1916. Assistant Physician, Robert B. Brigham Hospital. Member of Staff and Visiting Physician, New England Deaconess Hospital. Assistant Physician, Palmer Memorial Hospital. Former Instructor in Medicine, Harvard Medical School. His subject is "Chronic Arthritis and Its Treatment." Page 1109. Address 205 Beacon Street, Boston, Massachusetts.

BRILEY, ALLEN G. B.S. M.D. Harvard University Medical School 1928. Assistant in Medicine, Harvard Medical School. His subject is "The Treatment of Constipation." Page 1116. Address 270 Commonwealth Avenue, Boston, Massachusetts.

BOUSFIELD, CYRIL E. M.D. Medical Director, American Baptist Mission Hospital. His subject is "Notes on the Treatment of Leprosy." Page 1118. Address Chaoyang General Hospital, American Baptist Mission, Chaoyang, via Swatow, China.

MOSER, ORAN A. M.D. Yale University School of Medicine 1902. Health Officer, Rocky Hill Medical Examiner, Hartford County. President, Hartford County Medical Association, 1933-1934. His subject is "The Family Doctor." Page 1120. Address Rocky Hill, Connecticut.

BOWMAN, KARL M. A.B. M.D. University of California Medical School 1913. Formerly Assistant Physician, Bloomingdale Hospital, Captain Medical Corps, U.S. Army, Chief Medical Officer, Boston Psychopathic Hospital. Assistant Professor of Psychiatry, Harvard Medical School. Assistant Professor of Clinical Psychiatry, Boston University School of Medicine. Head of Department of Psychiatric Social Work, Simmons College School of Social Work. His subject is "Progress in Psychiatry." Page 1122. Address Boston Psychopathic Hospital 74 Fenwood Road, Boston, Massachusetts.

THE DOCTORS WELCH OF NORFOLK

BY HARVEY CUSHING

Over the river, on the hill,
 Lieth a village, white and still
 All around it the forest trees
 Shiver and whisper in the breeze
 Over it sailing shadows go,
 Of soaring hawk and screaming crow,
 And mountain grasses, low and sweet
 Grow in the middle of every street.

Over the northerly part of Litchfield County in Connecticut sprawl the rugged and heavily wooded foothills of the Berkshires, and in early May they are possibly even more lovely than when the first frosts of late September have suddenly turned to crimson the swamp maples of their lower valleys. But whatever the time of year, no part of Litchfield County is more quietly satisfying than the township of Norfolk which must have changed scarcely at all since Hopestill Welch decided to settle there one hundred and sixty-two years ago.

If the beauty of the countryside is thus felt by the casual visitor, how much more deeply must those feel who, born and bred in Norfolk village, have roamed the neighboring hills, fished the streams, and swum the ponds in boyhood days. And so the great grandson of this Hopestill Welch, though in the course of his eighty-four years he had wandered far and attained world renown, never lost his affection for the place of his birth and requested that it also be his place of burial just as it had been of his medical forbears.

Norfolk village, having been protected against the vandalism of modern days, has lost none of its old-time charm. Many of the villagers who have moved away and prospered have regularly returned to pass the summer on some of the nearby hillsides, but the village itself has changed but little. Loving hands have kept it trim and neat. The village green with its magnificent trees, its typical New England meeting-house and town hall is the same as always, and so too is the original village "burial-yard" laid out in 1757 as God's Acre.

Behind a low stonewall just beyond the last of the houses on the road to Canaan it lies inconspicuous to passers-by, on the lower slope of Haystack Mountain where it borders on the brook. In the shadow and solitude of great trees the headstones are scattered in groups as though they had accidentally grown there. No gravel walks, no artificial planting and regimented narrow plots have been needed here though the original acre has been considerably extended.

Whatever may have happened to the many from Norfolk who joined in the great migration to the New North-West—as did ten of Hopestill Welch's thirteen children—one gets the feeling that those who stayed behind must have lived to a great age else there would by this time be

more crowding in this one hundred and sixty square perches of land. Norfolknians while not boastful have good reason to take pride in the proverbial longevity of their people which is not surpassed or equalled by any other community in New England. In the space of two years not so very long ago, six persons died there whose average age was over ninety-three. Compared to this the Welches, as we shall see, mostly died young—in their early eighties, and it was a family tradition that they would be likely to keep going in perfect health just that long and no longer.

On this particular May fourth of 1934 with the countryside glistening after a warm Spring rain, the early afternoon sun struck across the hillside lighting up the feathery pink blossoms of the maples, the delicate early green of willows and birch, and the tufted white blossoms of an occasional shadblow, set off against the dark hemlocks and the brilliant green of the Spring turf, made it clear that the season had come to cast for speckled trout.

There is a touch of sadness and melancholy about Autumn which would seem the more natural time of year for an old man to die. But so far as anyone could ever tell, sadness and melancholy were moods of which he was incapable and it was as though he whose youthful spirit and reactions so belied his years had deliberately waited for Spring—waited at least as long as he could, for the season has been delayed by the hard winter and the venerable elms have not as yet burst their winter buds.

One such giant has come almost to envelop in protecting embrace the headstone of a certain Jerusha P —, who had been buried at its feet, evidently the wife of Captain John Porter who in 1793 came to be placed beside her. Another aged tree of the same kind once shaded the nearby knoll marked by a modest brownstone shaft where he the Welches and where a new grave has just been dug to hold the ashes of still another of them.

A few people had gathered at the knoll—his relatives and three or four others. Appropriate verses from Ecclesiastes were read by the local clergyman and followed by a simple prayer. Then two of his great-nephews who were at the same time his namesakes lowered the casket into its place. That was all—except for one incident.

In the small gathering was a frail little old lady whose many wrinkles could not conceal that she must once have been beautiful. She arose with some difficulty from the camp chair that had been provided for her and, refusing aid, walked over to where lay a spray of red roses she had brought and lifting them she placed them with her own hands beside the grave. Then turning away she said as to herself, "I shall now go." Only six months younger she was than this friend of her childhood, they

had long ago been playmates—perhaps, on her part, something more than that.

It was the same little old lady who four years before had been taken in a wheel chair all the way to Washington so that she might hear in Continental Hall what the President of the United States and other notables would have to say about her lifelong friend, and also what in return he would have to say for himself on that day when speeches in honor of his eightieth birthday were broadcast to all quarters of this country and abroad.

While this public celebration with its spontaneous outburst of affection was in its way a sort of canonization honors had been heaped upon this particular Doctor Welch throughout his life. He could not avoid them without being ungracious—and this he never was—but they left him unchanged in his simplicity. He always behaved on these occasions as though he were merely representing someone else—someone else who deserved the honor and for whom it was really intended.

It had been urged that the National Cemetery at Arlington was the proper place for him to be in view of his distinguished service during the War. He had merely volunteered on an April day in 1917 to help his friend the Surgeon-General, open his rapidly overwhelming mail, and the close of the War found him still there—much to his surprise and somewhat to his amusement—a Brigadier-General. But a military funeral with gun carriage firing squad the last post and all that, just because he had done his duty as he saw it would have been incongruous and unsuited to his real character and life. Public though much of it had come unsought to be. It was wholly consistent and typical of him that he should choose to rest where to the future passer-by he would be just another of the many Doctors Welch of Norfolk.

Even now should you happen to ask the aged apothecary in the village which of the Doctors Welch was the more celebrated, he would certainly say William Wickham the father of this William Henry. And should you venture to demur, knowing that William Wickham weary of compounding his own drugs had set him up in business some fifty and more years ago, he would be likely to reply:

"If you don't believe me just ask any middle aged person you may chance to meet up with for thirty miles around and see if they don't agree. Most of 'em will remember when they used to put a light in the window for him should he happen by in the dead of night. He was never known to send out any bills—pretended to forget that people owed him money and those who paid had to press it on him. There's his house just down the street—as it was when at the end of his seventy four years he left it to his successor—a good man too

though he could not stand the wear and tear so long as if he'd been a placid and good-humored Welch.

"It was in that house his son Willie was born and there's a tablet on it saving as much, but if you think the drinking fountain in front for thirsty horses coming up the hill, was put there in memory of your friend rather than for William Wickham his father, you make a great mistake. If you haven't forgotten your Latin, just go and read the inscription cut around its rim.

"And you will find just off the road the little house in which his father, Dr. Benjamin Senior, lived until he died at eighty-two, beloved like all the rest of them. It was his second wife, Elizabeth Loveland, a beautiful woman who lived to be eighty and was everybody's friend and known to every Sabbath-School boy in the town as 'Grandma Welch'—it was she who brought up the Dr. Welch you've just seen buried today, for his mother died when he was barely six months old.

"William Wickham wasn't the only one of old Dr. Benjamin's sons who took up medicine, there were four others who spent their lives within thirty miles of here—all men of the same kind and they are all buried together in the Acre. Asa was the eldest. He first started out in Tyringham but was invited to settle in Lee where he practised until his death. He was interested in public affairs—as indeed they all were for that matter—though he was the only one who happened to be sent to the State Senate. Benjamin Jr. was the next. He got his M.D. at Yale in 1823 and was in active practice for fifty-four years—first here for a time, then at Litchfield and finally at Salisbury. He became celebrated as a surgeon and there was a common saying hereabouts 'Don't give up hope before you've sent for Dr. Benjamin'.

"James was the third son. He got his degree at the old Berkshire School in 1830 and settled at Winsted where he built up a large practice in which he was active till he reached eighty, and what's more at least three of his sons became doctors. Then came William Wickham—the best of them all to my thinking. And after him the fifth and youngest was John Hopestill who also graduated at the Pittsfield school in 1848 and then practised in Salisbury, in Cornwall and in Norfolk till 1871 when he moved to Hartford where he finally drifted out of medicine into a manufacturing business."

So it would seem there must have been at least ten doctors in these three generations, all apparently men of very similar type good judges of people and good public servants, men able to instill confidence and win regard, all of them blessed with a rare capacity to gain and retain friendships with young and old all of them apparently men who were respected, admired and beloved. And then to follow the old apothecary's advice you go down the road and

find cut on the rim of the fountain erected in memory of your friend's father—the last of the Doctors Welch to pass his life wholly in Norfolk—what might be no less appropriate to William Henry his son

FONS SUM SOLATI TALIS ET IPSE FUIT

MISCELLANY

CONGRATULATIONS TO DR ELLIOTT P JOSLIN

According to reports in daily papers, Mrs Mabel H McCarthy of Buffalo provided in her will for a bequest for five thousand dollars to Dr Joslin to be used in promoting the work at his camp for the treatment of diabetic children

THE GREATER BOSTON MEDICAL SOCIETY CHANGES ITS NAME

Under the title of the New England Association of Jewish Physicians adopted by the Greater Boston Medical Society the old title was discarded at the Annual Meeting of this body

The officers elected are

President Dr Herrman L Blumgart.

President Elect Dr Harry C Linenthal

Vice President Dr Henry Kontoff

Treasurer Dr Max Ritvo

Secretary Dr David B Stearns

MASSACHUSETTS DOCTORS ELECTED TO FELLOWSHIP IN THE AMERICAN COLLEGE OF PHYSICIANS

On April 16 at the meeting of the American College of Physicians, in Chicago, Drs Horace K Boutwell of Brookline, Felix Percy Chillingworth of Boston, and Robert Sterling Palmer were elected to fellowship

THE FORSYTH DENTAL INFIRMARY

To a reader of the Nineteenth Annual Report of the Forsyth Dental Infirmary, interesting facts are apparent.

This institution is an important agent in promoting the hygiene of children, and occupies an important position in preventive medicine

It is within a comparatively few years that the treatment of oral diseases and defects of the teeth have been adequately recognized as important factors in preventive and therapeutic medicine, and beyond these obvious functions of dealing with disease, scientific dentistry in the field of orthodontia has a recognized relation to the psychology of childhood because the correction of deformities promotes self-esteem and confidence in the child

The attitude of the dental profession toward the Forsyth Infirmary is reported to be cordial, which is commendable John Hamilton Forsyth and his brother George Henry Forsyth have made a great contribution to the well being of children in co-operation with the George White Health Units

AN ENDORSEMENT OF DR TIMOTHY LEARY'S FINDINGS

At a meeting at Utica, New York, of the New York State Medical Society Dr Harrison S Martland, of Newark, New Jersey, Chief Medical Examiner of Essex County, said in reporting cases of sudden deaths, "As we grow older, I believe we eat too many dairy products I agree with Dr Timothy Leary of Boston that we eat too many foods high in cholesterol content as we pass the 40 mark. By that I mean butter, eggs, cream and other dairy foods"

MORTALITY RATES

Telegraphic returns from 86 cities, with a total population of thirty seven millions for the week ending May 5 indicate a mortality rate of 120 as against a rate of 112 for the corresponding week of last year The highest rate (193) appears for Nashville, Tenn., and the lowest (50) for Flint, Mich The highest infant mortality rate (167) appears for El Paso, Texas, and the lowest for Fort Worth, Texas, Louisville, Ky, Miami, Fla, Tacoma, Washington, and Wilmington, Del, which reported no infant mortality

The annual rate for 86 cities is 125 for the eighteen weeks of 1934, as against a rate of 120 for the corresponding period of the previous year

SUMMARY OF DEATHS AND DEATH RATES (ANNUAL BASIS) FROM AUTOMOBILE ACCIDENTS PER 100,000 ESTIMATED POPULATION FOR 86 CITIES FOR CORRESPONDING PERIODS OF 1934 AND 1933

	Week ending		First 18 weeks	
	May 5, May 6,		1934	1933
	1934	1933		
Total deaths	164	130	2,824	2,474
Death rate	22.8	18.1	21.9	19.1
Deaths due to ac-				
cidents in city	131	111	2,301	2,003
Death rate	18.3	15.5	17.8	15.5

—Bureau of the Census

A RADIO MESSAGE PREPARED AND SPONSORED BY THE COMMITTEE ON PUBLIC EDUCATION OF THE MASSACHUSETTS MEDICAL SOCIETY FOR THE DEPARTMENT OF PUBLIC HEALTH

THE RISE OF PUBLIC HEALTH CONSCIOUSNESS

BY ELEANOR J MACDONALD, A.B.*

The evolution of the present public health movement covers a period of about three thousand years It has advanced with the progress of civilization and comprises the ideas and accomplishments of many men of many ages The progress in the past seventy five years far exceeds that of the previous centuries, but the contributions of the Hebrew, Greek and Roman Periods and also of the Middle

*Statistician Division of Adult Hygiene Massachusetts Department of Public Health.
Station WEEL 1 15 P.M. January 19 1934

Ages have formed part of the basic structure in this development.

The beginnings of public health are chronicled in the Old Testament. The Mosaic rites furnished real public health precepts. A definite code for hygiene comprising diet, sex hygiene and avoidance of unclean objects is clearly defined. Directions are given for the segregation of the sick and the use of disinfection to prevent the spread of contagious disease. These public health measures were incorporated in the fundamentals of the religion, and high priests were guardians of the body as well as of the soul.

The contribution of Greece to public health was the attempt in Sparta to develop a physically perfect race. The humanitarian instinct of caring for the sick was not popular with them. Physical fitness was the desired end. All weak children were thrown into a cave on Mount Taygetus to die. The stronger ones were given a vigorous training in athletics and were subjected to the hardships of scanty clothing, plain food and stern discipline. The product of this training was characterized by Woodrow Wilson in 'The State' as 'a fine soldiery, and noble soldiers' mates, shapely sturdy women and lithe laconic men.

The beginnings of sanitation were found in early Rome in the water supplies, sewerage systems and methods for nuisance prevention. According to Frontinus, Water Commissioner of the City of Rome in the first century. From the Foundation of the city for 441 years (or until 313 B.C.) the Romans were content with the use of waters which they drew either from the Tiber or from wells or from springs. Springs have held down to the present day the name of holy things and are objects of veneration having the reputation of healing the sick, as for example the springs of the Prophetic Nymphs of Apollonia and of Juturna. But there now runs into the city the Appian aqueduct.

The early sewers were for drainage purposes and did not carry human excreta. In fact sewers for human excreta did not make an appearance until the nineteenth century. Later sanitarians were to improve on these early efforts, but to Rome belongs the beginning of sanitation.

Man has always been prone to consider that thing unimportant of which he has no certain knowledge. This can be the only explanation then for the period between classical antiquity and the Renaissance having been called the Dark Ages for so long. In architecture and art, it is in many respects still unequalled. In public health the classical ages left us with our first ideas of physical perfection and a sanitary and hygienic code. The first records of the Renaissance discuss accepted incidents such things as hospitalization of the sick, various types of surgery, numerous medical schools, quarantine for ships from plague-infested ports and detailed if erroneous books on anatomy.

To quote Garrison in his History of Medicine

"The growth of the Christian virtue of compassion towards weakness and suffering, and the more elevated and enlarged conception of the position and mission of women which grew out of it, led to new departures in medicine along untried paths, particularly in nursing the sick and in erecting hospitals everywhere for their care. Only idle bigotry could affirm that Pope and Emperor did not do a great deal for medicine in the advancement of good medical legislation, in the chartering and rebuilding of the medieval universities, in the great hospital movement of the middle ages, and in the encouragement of individual medical talent in many cases."

During this period the hygienic principles first noted by the Hebrews were improved. Many of the rules given in the "Regimen," a handbook of the medical school of Salerno, are good hygienic practice today.

An English translation of one of these advices follows:

'If thou to health and vigour wouldst attain
Shun weighty cares—all anger deem profane
From heavy suppers and much wine abstain
Nor trivial count it, after pompous fare,
To rise from table and to take the air
Shun idle noon-day slumber, nor delay
The urgent calls of Nature to obey
These rules if thou wilt follow to the end
Thy life to greater length thou mayst extend."

While hygiene advanced, sanitation was neglected. In a letter Erasmus said concerning the condition of the English household of the sixteenth century: as to the floors they are usually made with clay covered with rushes that grew in the fens which are so slightly removed now and then that the lower part remains sometimes for twenty years together and in it a collection of spittle, vomit, urine of dogs and men, beer scraps of fish and other filthiness not to be named.

The first mention of isolation occurred in the ancient Hebrew texts but its extensive application came about in the Middle Ages. Leprosy, bubonic plague, syphilis and smallpox were epidemic during this period and strenuous efforts were made to curb them by quarantine and isolation. The success was most marked in leprosy. Nineteen thousand hospitals for lepers were built and the disease gradually died out in Europe. The results were less apparent with the bubonic plague. In the fourteenth century the black death destroyed one-fourth of the population of Europe. Quarantine was instituted against ships from the plague districts but little attention was given to rats. This would account for the imperfect effect of control of this disease.

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CORRESPONDENCE

AN APPEAL FOR A SECTION OF DERMATOLOGY AND SYPHILOLOGY

Editor, *New England Journal of Medicine*

The growth of interest in dermatology and syphilology in the past twenty five years has been striking. This is manifest in the number of societies which now exist, in the steady increase in attendance at these meetings and perhaps most of all, in the fact that it has been deemed important to establish a national board known as the American Board of Dermatology and Syphilis, which issues a certificate of fitness to such only as can pass its rigid examinations and searching investigations.

There are four societies with which Massachusetts dermatologists are affiliated. First, there is the New England Society whose membership is largely composed of Massachusetts men. Then there is the Atlantic Dermatological Conference which originated in Boston and now includes societies from Montreal to Washington. Thirdly, there is a large section of the A. M. A., and fourthly, the American Dermatological Association.

As to the attendance at these various societies to which the Massachusetts dermatologists and syphilologists belong, we need only to study the New England Society to obtain a picture of them all. Starting in 1915 with seventeen members, the New England Society to-day numbers seventy five active members with several honorary members in other states.

Hospitals and medical schools, also reflect the growth of interest. The country over the clinics for dermatology and syphilis are as large and in some instances larger than those for medicine and surgery. (Abroad, three and four hundred bed hospitals devoted solely to dermatology and syphilis are no rarity. In this country though the number of hospital beds is steadily growing we are still behind.)

Finally nine state societies have created Sections for Dermatology and Syphilis which have invariably been great successes.

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CHARGES FOR THE MAINTENANCE OF THE MIDDLESEX SANATORIUM

May 17, 1934

Editor, *New England Journal of Medicine*

The letter from Dr. Blaisdell in the March 23 issue interested me for at the present time I happen to be on the Board of Health of Lincoln in the same county as Winchester, and we must bear our proportionate charge for the maintenance of the Middlesex Sanatorium, the institution which Dr. Blaisdell criticizes.

In the first place, your correspondent states that the town of Winchester was never consulted about building this Sanatorium. That, of course, is an erroneous statement, for the Hospital was built by a mandatory Act of the State Legislature passed in 1928, Chapter 369, and approved by the Governor June 5, 1928. The town of Winchester has its representatives in the Legislature.

The original assessment to the town of Winchester was \$60,552.72. Of this, Winchester paid \$552.72 in 1932 and elected to have the balance financed by bonds to run for fifteen years, \$4,000 maturing each year. Winchester has made two payments on the principal. The interest paid in 1933 was \$3,191.39, and for 1934 it was \$2,293.74. Obviously as the principal is paid the interest decreases considerably. This is another inaccurate statement by your correspondent, for the town of Winchester is not paying interest at five per cent on \$60,000.00.

Again he does not explain how he obtains the charge for maintenance, \$4,553.80. The facts are that \$926.72 of this amount was due the Commonwealth from the county over a period of years, and last year by authority of the Legislature (Chapter 331 Acts of 1933) the long standing bill was apportioned to the various towns and this was Winchester's share. In no way should this be added to the maintenance charge.

The item of \$1,655.50 which is for the care of patients for 135 weeks, appears to be the one correct statement in the letter. I would call attention to a further inaccuracy in that your correspondent did not state that the town of Winchester received \$689.99 from the State as a subsidy for the tuberculous patients.

There may of course be an honest difference of opinion as to whether the original cost of the insti

tution should be counted in the weekly cost of the patient. Personally, I do not think that it should. If it is, your correspondent is again wrong in his estimate of the weekly cost. The total should be \$10 886 33, obtained by adding principal paid \$4 000 interest paid \$2,293 74, maintenance \$3,627 08 and care of patients for 135 weeks \$1 655 50 and subtracting the subsidy the town received of \$689 99. This will give a charge per week of \$80 64. I do not feel that the principal and interest should be included in this total. If they were eliminated the cost last year to the town would be \$4,592 59 and the cost per week \$34 01.

It may be of interest to know what Lincoln paid because of this county hospital. Our original assessment was \$5 900 01 which we paid at once. In 1934 we were assessed \$430 20. We have not yet had a patient in the hospital.

The care and management of tuberculosis is a community problem and in my opinion cannot be looked after satisfactorily by the general practitioner. When one realizes that this Sanatorium gives complete care by specialists in tuberculosis, has a sufficient number of trained nurses, dietitians and a splendid plant, to me it is remarkable that the cost to the county per week is so small.

In addition to the regular care and treatment, special service is given to suitable patients. All forms of collapse therapy are in use and it is interesting for the profession to know that at the end of 1933 62½ per cent of the 256 patients then at the Sanatorium had received some form of collapse therapy.

Another important point to be remembered is that the Sanatorium operates an outpatient department where diagnostic service is given without cost to patients of the physicians in the district. Reports of x-ray examinations, tuberculin tests and physical examinations are promptly rendered to the physicians of the county sending their patients there for examination. In 1933 the outpatient department examined 2 044 patients. Further the Sanatorium sends out members of its staff to conduct clinics at the following places: Ayer Memorial Hospital which serves the eleven towns of the Nashoba health district, Newton Hospital for the City of Newton and Lawrence Memorial Hospital for the city of Medford.

The waiting list of the Sanatorium is regrettable but is it not a tribute to the high standard of the service given by the institution and the desire of patients to go there? Not infrequently when urgent cases have applied for admission and have been referred to other institutions, they have elected to wait until they could get into the Middlesex Sanatorium.

The trustees held a meeting a short time ago at the Sanatorium to tell the county that there was a greater demand for beds than they could supply and at the present time they are trying to secure permission from the Legislature for an addition of approximately 135 beds to meet this greater demand for treatment.

It is without doubt expensive to care for tuberculosis properly, but it is a disease the prevention of which is important to the entire community and because of that I believe the work in eradicating tuberculosis should be supported in every possible way and careless criticism should not be made.

ROBERT L. DENORMANDIE.

Lincoln Mass

RECENT DEATHS

CHURCHILL—ALICE SYMONDS CHURCHILL, M.D., (reported in the *Boston Herald* as Alice A. Symonds), formerly of Haverhill, died in a hospital at Yarmouth, Nova Scotia May 14, 1934. She was born in 1860. She graduated from the Massachusetts General Hospital Training School for Nurses and later from the Tufts College Medical School in 1899.

She practiced in Haverhill for several years and served on the staff of the Hale Hospital.

In 1918 she did commendable work in the influenza epidemic.

She left Haverhill about twelve years ago and since then has spent her winters in Florida.

She joined the Massachusetts Medical Society in 1900 and resigned in 1906.

WEBBER—CHARLES SUMNER WEBBER, M.D. of 35 Front Street, Weymouth, Massachusetts, died suddenly May 16, 1934. He was born in 1897. He was a graduate of Boston University School of Medicine and later of the Medical School of Tufts College and was on the faculty of the Medical School of Boston University. He joined the Massachusetts Medical Society in 1926, and was a Fellow of the American Medical Association. He is survived by his widow, a son, a daughter, his mother and a brother.

COUTURE—MICHAEL HORATIUS COUTURE, M.D., of 58 Western Avenue, Lynn, Massachusetts, died in that city May 16, 1934. He was born in St. Hyacinth, Quebec, in 1872. He graduated in medicine from the University of Montreal Faculty of Medicine in 1893. Previous to practicing in Lynn he practiced in Montreal up to 1899.

Dr. Couture was one of the organizers of the Franco-American Society in Lynn and a member of the St. Jean Baptiste Church. He is survived by a sister, Miss Mary Couture of Coatcook, Quebec.

NOTICES

ST VINCENT HOSPITAL, WORCESTER

DRY CLINIC MONDAY, JUNE 4 (THE FIRST DAY OF THE MASSACHUSETTS MEDICAL SOCIETY MEETING)

10 30 A.M. to 12 30 P.M.

1. Indications for Devine operation for stomach lesions. Dr. James C. McCann.
2. Non-industrial lead poisoning. Dr. J. J. Humphrey.
3. Cancer of larynx. Dr. William E. Murphy.

Haggard, Howard W. *Mystery Magic and Medicine* Doubleday Doran and Company Inc. New York 1933
 Herschel Clemens *Frontinus and the Water Supply of the City of Rome* Dana Estes and Company Boston 1899
 Sigerist Henry E. *Man and Medicine* W W Norton and Company Inc. New York, 1922
 Sigerist Henry E. *The Great Doctors* W W Norton and Company Inc. New York 1933
 Walsh James J. *Medieval Medicine* A. & C. Black Ltd London 1920
 Winslow C E A. *The Evolution and Significance of the Modern Public Health Campaign* Yale University Press New Haven, 1923

CORRESPONDENCE

AN APPEAL FOR A SECTION OF DERMATOLOGY AND SYPHILOLOGY

Editor, *New England Journal of Medicine*

The growth of interest in dermatology and syphilology in the past twenty five years has been striking. This is manifest in the number of societies which now exist, in the steady increase in attendance at these meetings and, perhaps most of all in the fact that it has been deemed important to establish a national board, known as the American Board of Dermatology and Syphilis, which issues a certificate of fitness to such only as can pass its rigid examinations and searching investigations.

There are four societies with which Massachusetts dermatologists are affiliated. First, there is the New England Society whose membership is largely composed of Massachusetts men. Then there is the Atlantic Dermatological Conference which originated in Boston and now includes societies from Montreal to Washington. Thirdly, there is a large section of the A. M. A., and fourthly, the American Dermatological Association.

As to the attendance at these various societies to which the Massachusetts dermatologists and syphilologists belong, we need only to study the New England Society to obtain a picture of them all. Starting in 1915 with seventeen members, the New England society to-day numbers seventy-five active members with several honorary members in other states.

Hospitals and medical schools, also, reflect the growth of interest. The country over, the clinics for dermatology and syphilis are as large and, in some instances, larger than those for medicine and surgery. (Abroad three and four hundred bed hospitals devoted solely to dermatology and syphilis are no rarity. In this country though the number of hospital beds is steadily growing, we are still behind.)

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Gage, Worcester, term began 1906 Dr James J Goodwin, Clinton term began 1921, Dr David Harrower Worcester, term began 1905, Dr Ernest L Hunt, Worcester, term began 1918 Dr Edwin R. Leib Worcester, term began 1932 Dr Arthur W Marsh Worcester term began 1922 Dr Erwin C Miller (Secretary), Worcester term began 1929 Dr Joseph W O'Connor, Worcester, term began 1931 Dr Walter C Seelye, Worcester term began 1930, Dr Edward H Trowbridge, Worcester, term began 1924 Dr Frank H Washburn, Holden, term began 1916 Dr Royal P Watkins, Worcester, term began 1927 *Dr Samnel B Woodward, Worcester, term began 1902

Censors Dr George A Dix, Supervising Censor, Worcester, Dr Gardner N Cobb, Worcester Dr John W O'Meara, Worcester Dr John E Talbot Worcester, Dr Donald S Adams, Worcester

Nominating Committee Dr John M Fallon Worcester Dr Alvin R. Moses, Chariton Dr Raymond H. Goodale, Worcester Dr Gordon Berry, Worcester Dr Joel M Mellick, Worcester

Library Committee Dr John M Fallon Worcester, Dr Ernest L Hunt, Worcester, Dr Arthur W Marsh, Worcester

Librarian Dr Albert C Getchell Worcester
Auditing Committee Dr Donald K McClusky, Worcester Dr Thomas Hunter, Shrewsbury Dr James T Brosnan, Worcester

*Councillor for life by virtue of being a past president of the State Medical Society

ESSEX NORTH DISTRICT MEDICAL SOCIETY

The ninetythird annual meeting of the Essex North District Medical Society was held at the Andover Country Club on Wednesday May 9 1934, at 12 30 P M Dr Parr, vice-president, presided in the absence of Dr Coffin A steak dinner was served at 12 30 followed by the business meeting

The records of the previous meeting were read and approved

On motion of Mr Burnham it was voted that the Society pay seventy five cents for each member (half the cost of the dinner)

The treasurer's report was read and accepted by the Society

The report on the Committee on Permanent Funds was read by Dr G S Allen showing a total on deposit at present \$1553 32, with a balance due the Permanent Fund from the frozen assets at the First National Bank in Haverhill of \$153 64

Resolutions on the death of Dr Merrill of Lawrence were read by Dr Sargent and it was moved that they be spread upon the records and a copy sent to the family

The report on the death of Dr McGauran was read by Dr McAllister and it was voted that this be inscribed on the records and a copy sent to the family

The report of the Public Relations Committee was

submitted by Dr Bagnall and was accepted as a report of progress

Dr Sweetsir, chairman of the nominating committee, submitted the nomination of officers for the ensuing year and it was unanimously voted that the secretary cast one ballot for the list as submitted, which list is appended below

The president then introduced Dr L M Hurxthal who showed two very instructive reels of moving pictures manifesting very clearly in a diagrammatic way the mechanism of heart action through its conducting paths and parallel, with these diagrams the part of the electrocardiogram corresponding with each part of the cycle

Dr L E Phaneuf, of Boston, was then introduced and, with the assistance of lantern slides, demonstrated and discussed some of the more common lesions with appropriate office treatment, in the gynecological field. Dr John Sprouli of Haverhill was then introduced and discussed in a very practical way the diagnosis and management of angina pectoris

The meeting was adjourned at 4 30

President J E Parr Methuen

Vice-President C F Warren Amesbury

Secretary E S Bagnall Groveland

Treasurer E S Bagnall Groveland

Auditor A. M Hubbell, Haverhill

Censors E P Laskey Haverhill, R L Toppan

Newburyport J F Waich, Lawrence A E Chesley, Lawrence, P J Mullen, Amesbury

Councillors J F Burnham, Lawrence, T R

Healy Newburyport F W Snow Newburyport,

H F Dearborn, Lawrence Arthur P George,

Haverhill E P Laskey Haverhill L T Stokes,

Haverhill R V Baketel, Methuen J J McArdle,

Lawrence W D Walker, Andover

Nominating Councillor J F Burnham Lawrence.

Alternate Nominating Councillor T R Healy

Newburyport.

Commissioner of Trials R C Hurd Newbury

port

Committee on Funds G S Allen Lawrence,

G B Sargent, Lawrence H Kapp, Haverhill

Correspondent to *New England Journal of Medicine* E S Bagnall, Groveland.

Delegate to Committee on Public Relations of

Massachusetts Medical Society E S Bagnall

Groveland

E S BAGNALL, M D, *Secretary*

PHI DELTA EPSILON FRATERNITY

The Phi Delta Epsilon Fraternity of the Boston University School of Medicine held its meeting in the Evans Memorial Auditorium on Monday, April 23, 1934 Dr Alexander S Begg presided

The first speaker was Dr Lewis M. Hurxthal of the Lahey Clinic, who presented a very interesting discussion of 'Myxedema, Hypometabolism and Blood Cholesterol' Several instructive cases were presented and illustrated by means of lantern slides

- 4 Fracture of neck of femur—nail operation Dr John W O'Meara.
5 Trichiniasis simulating surgical conditions Dr John M. Fallon
6 X ray diagnosis—Kidney Dr A E O'Connell
7 Pathological demonstration Dr William Moran

WORCESTER CITY HOSPITAL

The program of clinics to be given at the Worcester City Hospital, Monday, June 4, 1934 (the first day of the annual meeting of the Massachusetts Medical Society) has been amended as follows

Participating in the Surgical Section, in addition to Dr F H Lahey, who will present peptic ulcers, the following names have been included

Dr G E Haggart, presenting fractures, Dr H M Clute, presenting gall stones, Dr R B Cattell, presenting cancer of the colon and rectum, and Dr L M Huxthal, presenting thyroidectomy and myxedema

A complete program will be distributed at the meeting

REPORTS AND NOTICES OF MEETINGS

THE NORFOLK DISTRICT MEDICAL SOCIETY

The Annual Meeting of the Norfolk District Medical Society was held in the Hotel Kenmore, Boston, on the evening of May 8, 1934. The business meeting was called to order by Dr Begg, the President, at 6 15 P M. Minutes of the previous meeting were read and accepted. Report of the Treasurer was read and accepted. Reports of various committees were read and accepted. The Nominating Committee's List for 1934-1935 was then read and the Secretary was instructed to cast one ballot for the list as read. The ballot was so cast and the following officers were declared elected

President Cadis Phipps, Brookline

Vice President Leighton F Johnson, Norwood

Secretary Frank S Cruickshank, Brookline

Treasurer George W Kaan, Sharon

Commissioner of Trials H F R. Watts, Dorchester

Nominating Councilor T J Murphy, Roxbury
W A. Griffin (Alt), Sharon

Censors H K. Boutwell, Brookline E P Rugles, Dorchester George W Winchester, Milton
Herbert L Johnson, West Roxbury, Maurice Gerstein Roxbury

Councillors H L Babcock, Dedham, Karl R Bailey, Jamaica Plain Henry Baker, Dorchester, F G Balch, Jamaica Plain Hollis Batchelder, Dedham A S Begg West Roxbury, David D Berlin, Brookline David N Blakely, Brookline H K Boutwell, Brookline, Walter L Burrage Brookline, F S Cruickshank Brookline S F Curran, Dorchester David G Eldridge Dorchester, A. L. Fenton, Norwood I A Finkelstein Dorchester, John E Fish, Canton C S Francis Brookline Alice M Gray, Roxbury, W A. Griffin, Sharon, J B Hall, Roxbury

L F Johnson, Norwood, F E Jones, Brookline, George W Kaan, Sharon, W B Keeler, Roxbury, C J Kickham, Brookline, M M Knudson, West Roxbury, W A Lane, Milton, J S H Leard, West Roxbury, Charles Malone, Jamaica Plain, F W Marlow, Jr, Brookline J S May, Roxbury, F P McCarthy, Milton, L T McCready, Jamaica Plain, S F McKeen, Brookline, Hyman Morrison, Roxbury, T J Murphy, Roxbury, Samuel Nadel, Dorchester, Benjamin Parvey, Dorchester, Cadis Phipps, Brookline, Victor Safford, Jamaica Plain, David D Scannell, Jamaica Plain, Alonzo J Shadman, Jamaica Plain, J L Sullivan, Roxbury, H F R. Watts, Dorchester

At the close of the business meeting it was announced that a letter of commendation was received by the officers in connection with the work of the Legislative Committee of this Society expressing appreciation of the work of this committee with particular reference to its activities in relation to Senate Bill No 162

A standing vote of thanks was accorded the officers of the Society and the Committees for their work during the past year

After the transaction of certain incidental business this section of the meeting was adjourned

An excellent dinner was enjoyed in the Crystal Room of the Hotel and following this the members and guests enjoyed an extremely interesting illustrated lecture entitled "The Romance of News Gathering," by Mr Alton Hall Blackington, photographer for the *Boston Herald*

FRANK S CRUICKSHANK, M D, *Secretary*
1695 Beacon Street, Brookline

WORCESTER DISTRICT MEDICAL SOCIETY

OFFICERS ELECTED FOR 1934-1935

President Dr Ernest B Emerson, Rutland

Vice President Dr William F Lynch, Worcester

Orator Dr Roy J Ward, Worcester

Treasurer Dr Edward P Disbrow, Worcester

Secretary Dr Erwin C Miller, Worcester

Councillors on Nominations Dr David Harrower, Worcester Dr Royal P Watkins, Worcester—Alternate

Committee on Funds Dr Michael F Fallon, Worcester Dr Royal P Watkins, Worcester, Dr Leslie R Bragg Webster

Commissioner of Trials Dr Walter P Bowers, Clinton

Councillors Dr James C Austin Spencer term began 1930 *Dr Walter P Bowers, Clinton, term began 1902 Dr Leslie R Bragg Webster, term began 1922, Dr Frank H Clapp, North Grafton, term began 1930, Dr Philip H Cook Worcester, term began 1929 Dr William J Delahanty, Worcester, term began 1913 Dr George A Dix, Worcester, term began 1921 Dr Ernest B Emerson (President), Rutland term began 1934, Dr George E Emery, Worcester term began 1920, Dr Michael F Fallon, Worcester, term began 1916 Dr Homer

lost. The slightest injury to the eyes in cases of exophthalmos exposes them to infection and subsequent complete destruction. In operating upon a patient with exophthalmos therefore extreme care should be exercised in the protection of the eyes.

The subject of iodine in hyperthyroidism was next discussed. The administration of iodine leads to remarkable changes in the hyperplastic thyroid. The colloid is increased, the iodine content of the dried gland is increased and the epithellum is changed from the typical columnar type of the hyperplastic gland to a low cuboidal. Marine believes that the iodine causes an accumulation of colloid within the follicles and this through the agency of increased pressure causes a regression of the hyperplasia. Patients become refractory to the influence of iodine after this drug has been administered for about two months. For this reason physicians should not administer iodine to patients with hyperthyroidism if operation is planned for the near future. The administration of iodine should be left in charge of the surgeon.

Dr Lahey discussed the group of patients which he has termed thyrocardiac. These are patients with hyperthyroidism and either auricular fibrillation or cardiac decompensation. The condition results from the overloading of a previously damaged heart by overactivity of the thyroid. The mortality from operations on thyrocardiacs has been about 4.25 per cent. About 97 per cent of patients have been permanently relieved of decompensation. Follow up has shown, however, that the blood pressure continues to have a rising tendency in spite of operation.

The speaker next described the condition of intra-thoracic goiter and illustrated the clinical picture and x-ray findings by lantern slides. About eight per cent of over 12,000 goiters at the Lahey Clinic have been intrathoracic. Symptoms of dyspnea and choking are prominent in this condition and most apt to come on at night when the bronchi are not kept so well cleared as during the daytime. The mortality from operation in this type of goiter has been only two per cent.

Dr Lahey ended his talk with a consideration of tumors of the thyroid in which he brought out interesting points both in diagnosis and treatment. About 96 per cent of thyroid carcinomata arise from fetal adenomata. Metastasis of the histologically benign adenoma was explained by the fact that these tumors grow into veins and so are transported elsewhere in the body. The location and typical appearance of lateral aberrant thyroids were discussed and their relation to malignancy was emphasized.

An excellent discussion of the subjects presented was given by Dr Allan Winter Rowe. He pointed out the numerous factors which influence the basal metabolic rate so as to make the determination unreliable. The blood cholesterol level may well be a better index of thyroid deficiency. Even this however may be hardly more than a rough index. Dr Rowe said that the true significance of blood constit-

uents will be realized only when the laboratory sciences have progressed to such a degree as to enable us to interpret the various elements in terms of each other. Drs Hurxthal and Lahey answered several questions which had been asked during the course of the discussion.

NEW ENGLAND MEDICAL SOCIETY

The semi-annual meeting of the New England Medical Society will be held in the Evans Auditorium of the Massachusetts Memorial Hospitals, 80 East Concord St., Boston on Thursday, May 31, at 8 15 P.M. The speaker of the evening will be Dr Edward W. Archibald of Montreal, Professor of Surgery, McGill University Faculty of Medicine. His subject will be 'The Aetiology and Treatment of Recurring Subacute Pancreatitis' (with lantern slides). Discussion by Drs Charles T. Howard, Daniel F. Jones, Richard H. Miller, William R. Morrison and Lester R. Whitaker. All physicians interested in this subject are invited to attend this meeting.

RUDOLPH JACOBY, M.D., *Associate Secretary*

AMERICAN ASSOCIATION FOR THORACIC SURGERY

The seventeenth annual meeting of the American Association for Thoracic Surgery will be held in Boston on May 31, June 1 and 2. A program of papers on thoracic surgery and allied subjects will be given on Thursday and Friday in Building C Amphitheatre at the Harvard Medical School. On Saturday morning programs will be provided at the Massachusetts General Hospital, the Peter Bent Brigham Hospital and the New England Deaconess Hospital on thoracic disease.

Owing to a limited seating capacity a large portion of the Amphitheatres must be reserved for members of the Society and their out-of-town guests. However, it is hoped that there will be adequate space to enable local members of the profession particularly interested in this field to attend the sessions.

ALUMNI LUNCHEON

Massachusetts Alumni of University of Maryland Medical School, Baltimore Medical College, College of Physicians and Surgeons, Baltimore.

Date—Tuesday, June 5th

Time—12 30 P.M.

Place—Hotel Bancroft, Worcester

Reservation should be made through Dr W. B. Davidson (1917), 36 Pleasant St., Worcester.

AMERICAN PROCTOLOGIC SOCIETY

CLEVELAND MONDAY AND TUESDAY, JUNE 11-12, 1934

Headquarters: Hotel Cleveland

Arrangements: T. E. Jones, Cleveland; C. C. Neckling, Pittsburgh.

Regular and orthodox practitioners, members of the American Medical Association and not affili-

It was pointed out that the basal metabolic rate does not parallel the degree of thyroid deficiency, and cases are frequently encountered in which the deficiency is not clinically apparent and the basal metabolic rate is equivocal. It is especially in these cases that a determination of the blood cholesterol is helpful in so far as it is an indicator of thyroid deficiency. It is also of great value in determining whether a patient needs substitution therapy after subtotal thyroidectomy.

Dr Hnrxthal illustrated five cases of hypopituitarism from chromophobe adenomata. In these cases the basal metabolism varied from minus 18 to minus 37 but there was no elevation of the blood cholesterol. For this reason it is unlikely that the lowered metabolic rates in these cases were due to a secondary depression of the thyroid. Normal cholesterol values were found in spite of lowered basal metabolism in five cases of obesity, two cases of Addison's disease, and several cases of hypometabolism from other causes. In conclusion Dr Huxthal discussed the advantages of the blood cholesterol as a clinical aid in the diagnosis of thyroid deficiency states.

Dr Frank H. Lahey next discussed "Hyperthyroidism, Its Diagnosis and Management." By means of lantern slides he showed patients, illustrating the different forms of the disease. The first case was that of a young girl with extraordinarily prominent signs of hyperthyroidism. The picture was one of typical "frozen fright"; there was such marked exophthalmos that considerable difficulty was experienced in attempting to keep the lids from slipping back behind the eyeball, and the other classical signs of Graves' disease were present. There was no apparent enlargement of the thyroid gland. The speaker emphasized the fact that the disease is exactly the same in young and adults. Children, however, have a tremendous capacity for reacting to intoxications of any sort. Hence it may become difficult to tell whether a given clinical picture, such as fever, elevated basal metabolic rate, etc., is due to the intensity of the disease process or to the exaggerated way in which children react to the intoxication. For this reason two exceptions are made in the treatment of hyperthyroidism in children:

- 1 One-stage subtotal thyroidectomy is to be avoided because of the violent reaction that children may have postoperatively.

- 2 Children, unlike adults, need the products of thyroid activity for growth and development so that less thyroid is removed at operation than in adults.

Dr Lahey next described an interesting group of cases of what he has called "Apathetic Hyperthyroidism." The underlying condition is essentially identical with that of typical Graves' disease, but the difference in the clinical pictures is due to the fact that the former occurs in older individuals who not only react differently to the intoxication but are very apt to have a long standing burned out process. In these cases one finds no anxiety or tension. The picture is rather one of apathy. Instead of

warm, moist, flushed skin of the activated case one finds a cool, dry, pigmented, wrinkled skin. The cause of the pigmentation is not understood but it disappears after operation. The basal metabolic rate in these patients is only moderately elevated. There is a tachycardia, but the typical pounding heart found in young persons is absent. The diagnosis of apathetic hyperthyroidism is made by the presence of an unexplained slightly elevated basal metabolism, a tachycardia, a history of loss of weight over a long period of time and no marked myasthenia.

The speaker then described Thyroid Crisis and its management. The clinical picture and the results of treatment were very well illustrated with lantern slides. Patients have crises when a maladjustment occurs between the food intake and the fuel required to satisfy the increased basal metabolism. The imbalance is aggravated by vomiting and diarrhea which are prominent symptoms. Once the state of thyroid crisis has set in, treatment is difficult, but if the condition is recognized before it is fully established it responds to treatment quite satisfactorily. For early diagnosis, the following points should be borne in mind:

- 1 A rise in pulse rate day after day for no obvious reason.
- 2 Unexplained vomiting and diarrhea.
- 3 Signs of irrationality.
- 4 The development of an infection of any kind.

Any of the above signs should make one suspect impending crisis in hyperthyroidism and is an indication for the institution of immediate treatment. Dr Lahey stressed the use of constant intravenous glucose in saline in the management of crisis. It is best to cut down on the vein and tie in an indwelling intravenous needle. The five per cent glucose solution is run in at a rate of 40 to 60 drops per minute night and day for as long as necessary. The speaker cited one case in which this was done for eleven days.

The consensus has been in the past not to operate upon patients for a considerable time after crisis. Dr Lahey pointed out that this idea has been erroneous. He advised vigorous pre-operative treatment with a high carbohydrate diet after the crisis has been passed. This is followed in two or three weeks by removal of half the thyroid which prevents the patient from returning into crisis. After about six weeks the operation for subtotal thyroidectomy is completed.

The treatment of the eyes in hyperthyroidism is very important. One case was illustrated in which exophthalmos developed after a condition of myxedema had set in with a basal metabolic rate of minus 25. Exophthalmos is due to a myxomatous infiltration of the extrinsic eye muscles so that the orbit is unable to accommodate all the ocular tissues. The logical treatment is therefore to decompress the orbit and this is accomplished by removing the roof of the orbit on each side a neurosurgical procedure. Dr Horrax has done this operation in a few cases and thus saved eyes which would certainly have been

lost. The slightest injury to the eyes in cases of exophthalmos exposes them to infection and subsequent complete destruction. In operating upon a patient with exophthalmos, therefore, extreme care should be exercised in the protection of the eyes.

The subject of iodine in hyperthyroidism was next discussed. The administration of iodine leads to remarkable changes in the hyperplastic thyroid. The colloid is increased, the iodine content of the dried gland is increased, and the epithelium is changed from the typical columnar type of the hyperplastic gland to a low cuboidal. Marine believes that the iodine causes an accumulation of colloid within the follicles and this through the agency of increased pressure causes a regression of the hyperplasia. Patients become refractory to the influence of iodine after this drug has been administered for about two months. For this reason physicians should not administer iodine to patients with hyperthyroidism if operation is planned for the near future. The administration of iodine should be left in charge of the surgeon.

Dr. Lahey discussed the group of patients which he has termed thyrocardiac. These are patients with hyperthyroidism and either auricular fibrillation or cardiac decompensation. The condition results from the overloading of a previously damaged heart by overactivity of the thyroid. The mortality from operations on thyrocardiacs has been about 4.25 per cent. About 97 per cent of patients have been permanently relieved of decompensation. Follow-up has shown, however, that the blood pressure continues to have a rising tendency in spite of operation.

The speaker next described the condition of intrathoracic goiter and illustrated the clinical picture and x-ray findings by lantern slides. About eight per cent of over 12,000 goiters at the Lahey Clinic have been intrathoracic. Symptoms of dyspnea and choking are prominent in this condition and most apt to come on at night when the bronchi are not kept so well cleared as during the daytime. The mortality from operation in this type of goiter has been only two per cent.

Dr. Lahey ended his talk with a consideration of tumors of the thyroid in which he brought out interesting points both in diagnosis and treatment. About 96 per cent of thyroid carcinomata arise from fetal adenomata. Metastasis of the histologically benign adenoma was explained by the fact that these tumors grow into veins and so are transported elsewhere in the body. The location and typical appearance of lateral aberrant thyroids were discussed and their relation to malignancy was emphasized.

An excellent discussion of the subjects presented was given by Dr. Allan Winter Rowe. He pointed out the numerous factors which influence the basal metabolic rate so as to make the determination unreliable. The blood cholesterol level may well be a better index of thyroid deficiency. Even this, however, may be hardly more than a rough index. Dr. Rowe said that the true significance of blood constit-

nents will be realized only when the laboratory sciences have progressed to such a degree as to enable us to interpret the various elements in terms of each other. Drs. Huxthal and Lahey answered several questions which had been asked during the course of the discussion.

NEW ENGLAND MEDICAL SOCIETY

The semi-annual meeting of the New England Medical Society will be held in the Evans Auditorium of the Massachusetts Memorial Hospitals, 80 East Concord St., Boston, on Thursday, May 31, at 8:15 P.M. The speaker of the evening will be Dr. Edward W. Archibald of Montreal, Professor of Surgery, McGill University Faculty of Medicine. His subject will be "The Aetiology and Treatment of Recurring Subacute Pancreatitis" (with lantern slides). Discussion by Drs. Charles T. Howard, Daniel F. Jones, Richard H. Miller, William R. Morrison and Lester R. Whitaker. All physicians interested in this subject are invited to attend this meeting.

RUDOLPH JACOB, M.D., *Associate Secretary*

AMERICAN ASSOCIATION FOR THORACIC SURGERY

The seventeenth annual meeting of the American Association for Thoracic Surgery will be held in Boston on May 31, June 1 and 2. A program of papers on thoracic surgery and allied subjects will be given on Thursday and Friday in Building C Amphitheatre at the Harvard Medical School. On Saturday morning programs will be provided at the Massachusetts General Hospital, the Peter Bent Brigham Hospital, and the New England Deaconess Hospital on thoracic disease.

Owing to a limited seating capacity a large portion of the Amphitheatres must be reserved for members of the Society and their out-of-town guests. However, it is hoped that there will be adequate space to enable local members of the profession particularly interested in this field to attend the sessions.

ALUMNI LUNCHEON

Massachusetts Alumni of University of Maryland Medical School, Baltimore Medical College, College of Physicians and Surgeons, Baltimore.

Date—Tuesday, June 5th

Time—12:30 P.M.

Place—Hotel Bancroft, Worcester

Reservation should be made through Dr. W. B. Davidson (1917) 36 Pleasant St., Worcester.

AMERICAN PROCTOLOGIC SOCIETY

CLEVELAND MONDAY AND TUESDAY, JUNE 11-12, 1934

Headquarters: Hotel Cleveland.

Arrangements: T. E. Jones, Cleveland, C. C. Meckling, Pittsburgh.

Regular and orthodox practitioners, members of the American Medical Association, and not affili-

ated with medical groups admitting those not members of the A. M. A., are hereby cordially invited to attend the 35th Annual Meeting in Cleveland, Monday and Tuesday, June 11 and 12—the week of the A. M. A. meeting

For additional information, address the Secretary, Frank G. Runyeon, M.D., F.A.C.S., 1361 Perkiomen Avenue, Reading, Pa.

SOCIETY MEETINGS, CONGRESSES AND CONFERENCES

May 25, 27, 28, and 29—The American Association on Mental Deficiency. Details may be obtained from the Secretary, Dr. Groves B. Smith, Godfrey, Illinois

May 28—June 1—American Psychiatric Association will be held at the Hotel Waldorf-Astoria, New York City

May 31—New England Medical Society. See page 1141

May 31—June 2—American Association for Thoracic Surgery. See page 1141

June 4—Worcester City Hospital Clinics. See page 1137

June 4—St. Vincent Hospital (Worcester) Clinics. See page 1137

June 5—Alumni Luncheon, Massachusetts Alumni of the University of Maryland Medical School. See page 1141

June 7—Faulkner Hospital Clinical Meeting will be held at 5 P.M.

June 7, 8, 9—Annual Meeting of the American Association for the Study of Gout will be held in Cleveland, Ohio. For details of the program apply to Dr. J. R. Yung, Terre Haute, Ind.

June 11—American Medical Golfing Association will meet at the Mayfield Country Club in Cleveland. For details see page 1090, issue of May 17.

June 11–12—The American Proctologic Society. See page 1141.

June 12—American Heart Association will meet at 9:30 A.M. at the Cleveland Hotel, Cleveland, Ohio.

July 24–31—The IVth International Congress of Radiology will be held in Zurich under the presidency of Professor H. R. Schnitz, General Secretary Dr. H. E. Walther, Gloriastrasse 14, Zurich.

August 18–September 30—Medical Study Trip to Hungary. See page 975, issue of May 10.

September 3–6—American Public Health Association at Pasadena, California. Dr. J. D. Dunshee, Chairman, Local Committee on Arrangements.

September 4, 5, 6—International Union Against Tuberculosis. For information address the National Tuberculosis Association, 450 Seventh Avenue, New York City.

BOOKS RECEIVED FOR REVIEW

Bright's Disease. A clinical handbook for practitioners and senior students. By J. Norman Cruickshank. 208 pp. Baltimore: William Wood and Company. \$3.75.

Synopsis of Obstetrics and Gynecology. By Aleck W. Bourne. Fifth Edition. 439 pp. Baltimore: William Wood and Company. \$5.25.

The Queen Charlotte's Text Book of Obstetrics. By Aleck W. Bourne and others. Third Edition. 679 pp. Baltimore: William Wood and Company. \$6.00.

Surgical Clinics of North America. February, 1934. Volume 14, Number 1. Philadelphia: Number 226 pp. Philadelphia: W. B. Saunders Company. Paper, \$12.00; Cloth, \$16.00.

An Outline of Immunity. By W. W. C. Topley. 415 pp. Baltimore: William Wood and Company. \$6.00.

Aids to Neurology. By E. A. Blake Pritchard. Students Aids Series. 376 pp. Baltimore: William Wood and Company. \$2.00.

Our Mysterious Life: Glands and How They Af-

fect Us, Including the Vitamins. By William J. Robinson. 291 pp. New York: Eugenics Publishing Company. \$2.00.

The Elements of Experimental Embryology. By Julian S. Huxley and G. R. de Beer. 514 pp. Cambridge: The University Press. \$7.00.

Rhythm of Life. A guide to sexual harmony for women. By Sofie Lazarsfeld. 329 pp. New York: Greenberg. \$5.00.

External Disease of the Eye. By Donald T. Atkinson. 704 pp. Philadelphia: Lea & Febiger. \$7.50.

Transactions of the American Association of Genito-Urinary Surgeons. Forty-Fifth Annual Meeting held at Washington, D. C., May 8, 9, 10, 1933. Volume XXVI. 393 pp. Saint Paul and Minneapolis: The Bruce Publishing Company.

The Medical Profession and the Public. Containing papers read at a joint meeting of The College of Physicians of Philadelphia and The American Academy of Political and Social Science, in Philadelphia, February 7, 1934. 112 pp. Pennsylvania: Lancaster Press, Inc.

Studies from The Rockefeller Institute for Medical Research. Reprints. Volume 88. 621 pp. New York: The Rockefeller Institute for Medical Research, 1934.

BOOK REVIEWS

Teaching Methods in Medicine. By William D. Reid. 111 pp. The Graphic Press. \$1.00.

The purpose of this little book is to stimulate teachers in medical schools to find out whether there are methods of teaching developed in non-medical fields that might prove useful in medicine. The subtitle indicates that it proposes to discuss the application of philosophy of contemporary education to medical schools. The author foregoes inquiry into what the philosophy (if any) may be and dwells rather on certain facts about some types of contemporary education. Some "philosophies" of contemporary education have been developed as the result of attempts to educate sub-normal persons (the Montessori system, which perhaps is already mediaeval) or from efforts to educate groups of persons whose formal education closes with the junior high school because they have no intellectual interest in advance. This may be useful in analysis as the cinema film, run slowly or halted, shows elements in physical motion that escape the unaided eye. Yet to what extent these "philosophies" apply to university education is not made clear.

The background of the book is one of the most devastating criticisms possible of the present situation in medical education as it takes for granted that students of university grade need to have interest in their studies stimulated. "It is the teacher's job to see to it that the student experiences the 'will to learn, or feels a need for the learning' (p. 25). By what right are these persons studying medicine if they are not interested in their studies? It is to be

hoped that the rather dismal picture of medical education is not true of all medical schools

Nevertheless stimulating ideas often come from fields lying outside of one's formal major interest and there is need that teachers of medicine should become conscious of developments in the field of pedagogy. For the inexperienced teacher this is especially helpful, and there are in Dr Reid's book many useful hints, suggestions and directions. These are overlaid perhaps a little too much with the patter of the educationalists, and form a compilation of maxims rather than an integration of ideas about education. The book notes types of experiments among which the inexperienced teacher may find something suited to his immediate need. It does not supply a philosophy of education in the light of which procedures may be judged.

But the author claims in his preface that his book is only "suggestions." Accepting this statement rather than the more ambitious title as a criterion by which to judge accomplishment, the book may serve as a finger post to direct teachers of medicine to investigations of educational procedure so that they may find for themselves something by which they may become better teachers. The secret of excellent teaching is to have an excellent teacher. This fundamental consideration in education the book does not discuss.

Social Psychology By Abraham Myerson 640 pp
New York Prentice Hall, Inc \$3.50

This comprehensive volume includes all the various aspects of social psychology both from the descriptive and dynamic viewpoints. The fact that it is written by a physician and a trained psychiatrist of long experience and keen insight makes the volume of more practical value than similar treatises by non-medical psychologists who tend to delimit and isolate the various determinants of group psychology. Dr Myerson has been able to integrate and evaluate the neurological basis of human behavior, because of his opportunities to observe and study the effects of the visceral-organic structure upon the total personality.

The approach to the various aspects of social psychology is based upon two main theses, namely, that the visceral-organic structure of man is basic for an understanding of psychology and secondly, that apart from his group, man is a mere potentiality, it being necessary for him to develop in an environment which may foster, modify or even destroy his capacities. The student will find in this volume all the general material for the orientation of his studies with the more specialized fields of the social sciences particularly in the various discussions and detailed bibliographical references.

The book is divided into four parts: general social psychology, visceral social psychology, social psychology of the family and the social aspects of crime. It is emphasized that even individual psychology is social psychology, because the group is

an integrated whole and not a broken mosaic of isolated units.

Within the limits of a review, it is possible to indicate only briefly the rich material so well assembled and analyzed in this volume. It is refreshing to see the reflex as a unit of behavior, criticized, as such objective-experimental methods are inadequate to explain the complexities of human or even animal mental processes. One of the most interesting sections is that devoted to crime, particularly the description of that criminal type of minor delinquents which the author terms "unorganized extroverts," that is, individuals whose activities do not follow an organized or integrated plan. Sexuality and the digestive processes, as the two most important emotional drives, are visceral social affairs and are given an extended discussion because both enter psychologically and physiologically into human conduct, influencing mood, emotional satisfaction and even symbolization and morality. In fact, in the reproductive processes, one is not dealing with a sexual instinct but with a psycho-sexual one. Even character traits show this linking of mental and physical from gastro-intestinal activities, as shown by the reconstruction of the oral and anal character as formulated by psychoanalysis. The social structure continually modifies, inhibits and excites what is termed the 'curiosity mechanism.' It does this by means of diversified receptors which organize all individual experience. This learning-teaching mechanism is synonymous not only with intelligence, but extends to every visceral function, developing social attitudes and the dominance of the reality principle.

The volume can be highly recommended, not only for its lucid analyses and keen insight but also because the various approaches as developed by the author are so stimulating and provocative, that the reader will feel strongly inclined to pursue the various avenues of the subject.

Treatment in General Practice By Harry Beckman
Second Edition 889 pp Philadelphia W B
Saunders Company Cloth, \$10.00 net

The reviewer of this volume must confess to a previous bias against textbooks devoted especially to such subjects as prognosis, therapeutics, treatment, etc. Perusal of Professor Beckman's unusual work does much to dispel this bias. In well-written, often sparkling English the results are presented of a pharmacologist's investigations into the literature relating to the modern techniques of therapy. It is quite true as the author states in his preface that the subject of therapy is inadequately taught and that general rather than specific principles are emphasized. So much the more important is it therefore for the practitioner to possess a volume of this sort, in which the last word on the treatment of a given disease is presented in detail. To be sure this material may be obtained from the original articles, but these are scattered in so many journals that

their accessibility frequently becomes difficult or impossible to the average man Beckman reads all the articles, classifies them, examines them critically, and finally presents them to the practicing physician ready for immediate service in the case at hand A possible criticism is that multiple methods of treatment are frequently presented without an outline of what the author considers is the best program of therapy This may be valuable to the initiated but must be rather difficult to the novice

The book is startlingly up-to-date witness the inclusion of a section regarding the possible dangers of amidopyrine and related drugs in agranulocytosis, a recital of the doses of the various preparations of liver for parenteral use, etc The author's digestion of so many articles on so many diverse subjects does not appear to have influenced his critical faculties for his observations remain throughout quite sane The most valuable feature of the book is its exact detailed description of the methodology of treatment, often given in the direct words of the authorities quoted A section on "vehicles and incompatibilities," an alphabetically arranged bibliography of about 2500 references and an excellent index complete the volume

The Technique of Local Anesthesia By Arthur E Hertzler Fifth Edition 292 pp St Louis C V Mosby Company \$7.50

Hertzler aims to present briefly and simply his own technique of local infiltration anesthesia and to lay very little emphasis on the methods of regional anesthesia. He appears to draw from profitable and very extensive personal experience By mingling descriptions of surgical methods with local anesthesia technique, he points out how operations may be adapted to the demands peculiar to local anesthesia He has a sane realization of the limitations of local blocking, and with each region of the body discusses without prejudice the relative merits of that method and of general anesthesia This is one of the most distinctive and valuable characteristics of the book

Although he stresses the importance of accuracy of technique and the use of small amounts of a solution, yet unfortunately in the detailed directions he too frequently omits mention of the amounts to be used He discards nupercaln from consideration quite properly, but defends the use of quinine and urea hydrochloride His unreserved recommendation of diothane, a new drug of questionable merit, appears ill-advised There is no mention of the prophylactic use of the barbiturates, nor of the treatment of procaine toxicity

The illustrations are of good quality and number but unfortunately some of them are not labeled Detailed instructions are clear and adequate on many subjects, notably inguinal and umbilical hernias the bladder the male and female genitalia the rectum, the branches of the fifth cranial nerve, and the paravertebral injection of the thoracic nerves The general discussion concerning abdominal anesthesia is excellent. It includes the indica-

tions for local anesthesia, the neurological anatomy involved, and the sensitiveness of the viscera to various types of stimulation under varying degrees of inflammation. He agrees with others in placing little dependence on splanchnic anesthesia It is disappointing to find that he has nothing to offer in the way of local infiltration anesthesia within the abdomen

Many descriptions of technique are not clear, or seem very inadequate These include local anesthesia of the upper jaw antrum for glands of the neck, for the tongue, the breast and for fractures of the extremities, also sacral nerve block, and regional methods for the hand and forearm For example, the reader is told 'If the interior of the nose is to be entered the nerves supplying this region must be blocked The local use of anesthetics within the nose does not give good results He is then left to search for other sections of the text which will describe the nerve supply concerned and the methods of blocking it

The chapter on spinal anesthesia written by Arch E Spelman M.D. covers the practical aspects of this subject very clearly and well It deals with the use of procaine only

Because of the inadequacy of detail of most of the descriptions of technique, this book seems ill-suited to the surgeon or anesthetist who wishes either a systematic course of instruction or a handbook for quick reference It would, however, serve as a moderately helpful adjunct to the definitely superior texts available on regional anesthesia

Laboratory Medicine A Guide for Students and Practitioners By Daniel Nicholson Second Edition 566 pp Philadelphia Lea & Febiger \$6.50

The first edition of this work appeared in 1930 and was reviewed in these columns The present edition is a larger, heavier, and slightly more expensive volume Many of the interpretations have been expanded and the following procedures have been added the cough plate for diagnosis of whooping cough, pneumococcus typing by the rapid capsular reaction Corper's simple method for culturing the tubercle bacillus in sputum quantitative agglutination tests for the typhoid paratyphoid group also for undulant fever and tularemia, intradermal tests for echinococcus infection, the patch test in eczema, pregnancy test by Friedman's rabbit method, examination of synovial fluid, urea clearance test for renal function Congo-red test for amyloid disease by drogen ion concentration of urine urinary diastase blood cholesterol reaction, methemoglobin and sulfhemoglobin reactions, the histamine test to evaluate circulation of the lower extremities and the use of the ultrapak microscope in rapid tissue diagnosis

The illustrations have been increased from one hundred and eight to one hundred and twenty four and are as well reproduced as they were in the first edition For those who wish an excellent reference volume on laboratory medicine Dr Nicholson's book fulfills all requirements

The New England Journal of Medicine

VOLUME 210

MAY 31, 1934

NUMBER 22

NEW ENGLAND SURGICAL SOCIETY

THE DIAGNOSIS AND TREATMENT OF SUBDURAL HEMATOMATA*

A Report of Sixty-two Cases

BY DONALD MUNRO, M.D.†

IN a paper written thirty-one years ago on subdural hematomata under the name of Pachymeningitis Haemorrhagica my father¹ stated that the interest up to that time (in this disease) had been almost exclusively pathological and that he wished to emphasize that it should be more frequently surgical. I believe that in essence this statement is as true today as it was then. Because of our present failure to recognize the acute stages of so-called chronic subdural hematoma except at postmortem we fail to identify the latter as a late stage of the former and neglect the majority in favor of the minority. Thus, paper presents my evidence in support of these statements and summarizes data obtained from a study of 62 subdural hemorrhages admitted to the Boston City Hospital during four and one-half years. Both "acute" and "chronic" forms are included. Forty-one were on the Neurosurgical Service under my care. Of the remaining 21, 10 occurred on the medical services and the rest (11) on the general surgical side.

LITERATURE. A survey of the literature for the past 10 years demonstrates that the clinical or surgical side of this problem has been largely investigated through information derived only from the study of small groups of cases. Seventy-three articles published during this period have been available for review. Of these thirty-seven were single case reports. In fifty-four the authors' experience was limited to no more than five and in sixty-six to no more than 10 cases. Five offered no more proof than the author's opinion that he was dealing with the disease in question. Of the remaining two, one by Jelsma¹⁶ is a compilation of forty-two cases selected from the literature to which he has added two of his own. The other records Coleman's¹² personal experience with twenty instances and includes both the "acute" and "chronic" forms of the disease. Though not given in such detail I

From the Neurosurgical Service at the Boston City Hospital.

First read at the Annual Meeting of the New England Surgical Society, September 29, 1933, at Boston, and subsequently at a meeting of the New York Neurological Society, February 6, 1934, at New York.

*Munro, Donald—Visiting Surgeon, Neurological Surgery, Boston City Hospital. For record and address of author see This Week's Issue, page 1154.

should infer that his conclusions are fundamentally similar to mine and certainly from the surgical point of view are the only ones that merit serious attention from among this group.

Isolated observations of value when taken in conjunction with the whole mass of data were frequent however. For example it has thus been demonstrated that subdural hematoma may occur one hour, five, and a half and sixteen months postpartum^{17, 18, 5} that it may remain quiescent long enough to permit complete calcification even at the early age of eleven years^{19, 20} that it may be associated with syphilis²¹, scurvy⁵ or cerebral tumor^{22, 11}, that it is uncommon in congenital syphilis under two years of age²³ that children are not immune^{24, 25, 26, 5} and that it is a rare but possible occurrence in the posterior fossa²⁷. Encephalography and ventriculography have both been successfully used as diagnostic measures. Removal of the clot has been successfully carried out through trephine holes¹⁴, by bone flaps¹² and by means of multiple operations²⁸, and finally a therapeutic bone defect in the skull has been closed by a platinum plate²⁹ in the course of the treatment of this disease.

INCIDENCE. Autopsy statistics from Chicago by Le Count and Apfelbach² and from New York by Vance³ list subdural hematomata as among the commoner complications of cranio-cerebral injuries (Chart I). The former found 300 among 374 fractures of the skull and the latter recognized it as the cause of death in 132 out of 512 autopsies or twenty-five per cent. At the Boston City Hospital for a period of four years up to 1933 it has been noted thirty-six times among 1352 head injuries. This is at the rate of 2.6 per cent. These cases were all on the general surgical or medical services. With one exception the diagnoses were either not confirmed or were made at autopsy. Conversely in the past twelve months from January 1933 on the Neurosurgical Service at the same institution thirty-five of the thirty-seven proved subdural hemorrhages among 201 head injuries were diagnosed clinically. This is at the rate of 17 per cent. It is obvious that previous to 1933 at the Boston City Hospital many such cases were not

only been undiagnosed but their presence has not even been suspected. Once the frequency of this condition had been appreciated and diagnostic methods improved to a point where early treatment could be instituted, many more cases were recognized. The resultant drop in mortality among verified cases from 100 per cent on the general services to 41 per cent on the Neurosurgical Service has been striking.

fluid Naffziger⁶ directed attention to this condition in 1924 and more recently (1932) Peet and Kahn⁷ described it in infants. It was noted seven times among my cases.

PATHOLOGY A detailed study of the histopathology of the subdural hematomata removed at operation, particularly in regard to their microscopic structure and its relationship to the

CHART I

INCIDENCE

Time Involved	Total Cases Injury	Subdural Hematomata		Method of Diagnosis		Post mortem
				Verified	Not Verified	
Four years to 1933—Whole hospital	1352	36	2.6%	1	10	25
Jan., 1933, to Jan., 1934—One year						
Neurosurgical Service only	201	37	17.0%	35	0	2
Vance's figures	512	132	25.0%	—	—	132

ETIOLOGY Trauma is generally recognized as the chief and by some authors as the only cause of this condition. Henschen⁴ however points out that there may be other causes, mentioning among other things, disease of the blood and blood-forming structures, arteriosclerotic changes, syphilis and even experimental avitaminosis (Chart II). Nutritional diseases in

time elapsed between their formation and removal must be reserved for later presentation. Suffice it to say that certainly within three hours after receipt of the injury and the presumed formation of the clot, a single layer of fibroblastic cells has already extended from the dura well onto the surface of the former. The process that eventually is to terminate by encapsulation

CHART II

SOURCE OF BLEEDING

Source	Bilateral	Ruptured Vein	Lacerated or Contused Brain	Fractured Skull	Subdural Fluid	No Note
	11	3	24	15	7	22
	Pneumonia and Empyema	Cerebral and Cerebellar	Hemophilia	Meningitis	Known Alcoholic	Syphilis
Complications	1	1	1	1	23	3

children are also a frequent cause⁵. Four of my cases were complicated in this way, three by syphilis and one by the presence of hemophilia.

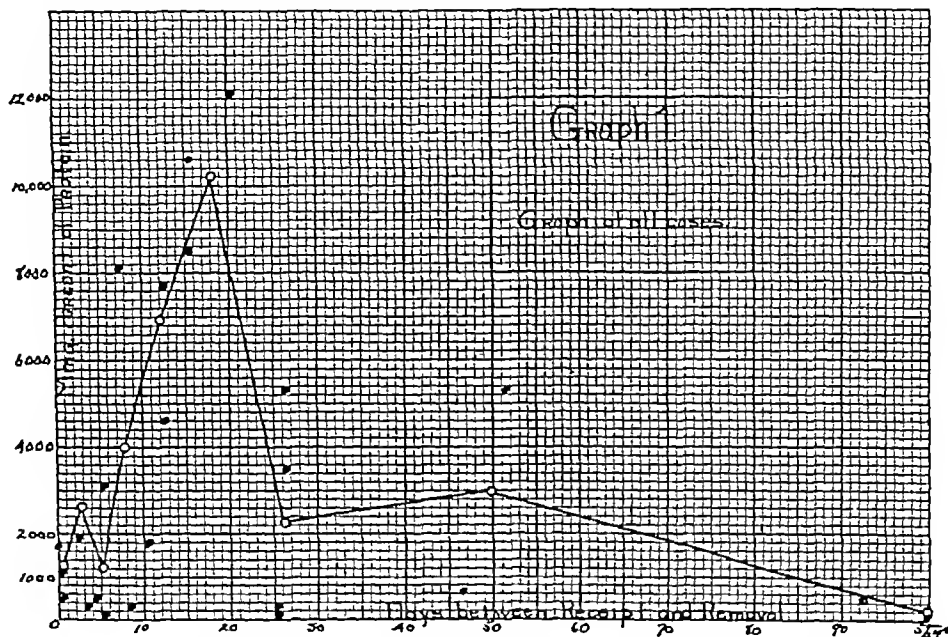
The source of the hemorrhage in the "chronic" form is stated to be for the most part either from a rupture of a bridging cortical vein or of a tributary to one of the large venous sinuses. Although not necessarily so, it is probable that this is true of most of the cases in whom symptoms develop slowly. Taken in relation to the whole group, however, this is only a small number. Both Le Count² and Vance³ find these to be unusual or rare origins for subdural hemorrhage in autopsied cases. My figures are in agreement with theirs in that fractures of the skull, and laceration and contusion of the brain are much more frequently the causative agents of the bleeding than the rupture of a single vein. The hemorrhage may also be so small as to escape notice even after the subdural space is open. In such cases the symptoms are caused by an associated collection of

of the free blood with organization of that portion adjacent to the capsule plus associated liquefaction of the more distant central parts has begun.

There is abundant indirect clinical evidence, based upon the frequent occurrence of a "latent period" in the development of symptoms, that such clots may slowly increase in size. The favorite explanation of this phenomenon has been to predicate repeated or slow seeping hemorrhages. These occur inside the clot from thin-walled blood spaces or "giant capillaries" and may produce multiple neo-membranes¹⁰. Such a condition is usually fatal however and is not a necessary prerequisite for a latent period. An equally reasonable explanation of this phenomenon has been offered recently by Gardner¹¹ and also during the past year, although apparently independently by Fischer and de Morsier¹². The former has shown experimentally that a given subdural clot which presents only a mini-

imum of signs at the time of its original formation will, after partial liquefaction, absorb by dialysis from the subarachnoid space sufficient fluid to enlarge it from 39 to 103 per cent. This flow results from the proximity of a highly concentrated protein solution to another solution in which the protein concentration is very much lower, the sole means of separating the two being the arachnoid which acts as a dialyzing membrane. I have been able to show that this experimental relationship holds true also in the human being. My figures when plotted graphically (graph 1) further suggest that there is a

ation and analyzed for me in F. Fremont-Smith's laboratory I have found that during the first twenty-four hours after injury the protein content averages 1100 mg per cent, the low being 500 and the high 1700. An average peak of 10,200 mg per cent is reached between the fifteenth and twenty-first days. The highest concentration occurred on the twenty-first day and was 12,168 mg per cent which is almost double that found in blood serum. Thereafter the fall is rapid to the twenty-seventh day, the average content at this time being 2200 mg per cent. From this point to the ninetyeth



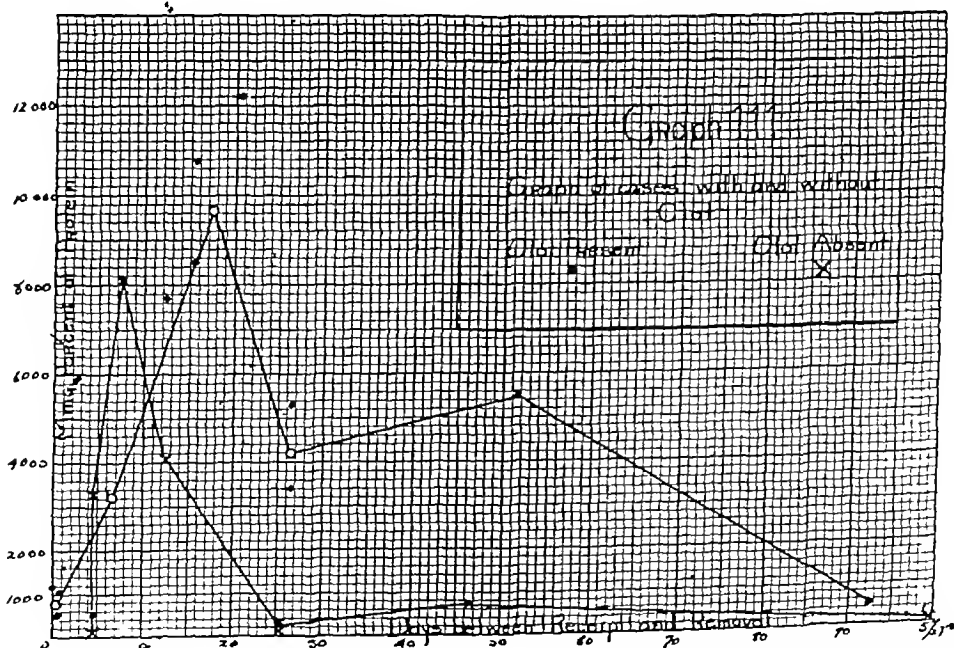
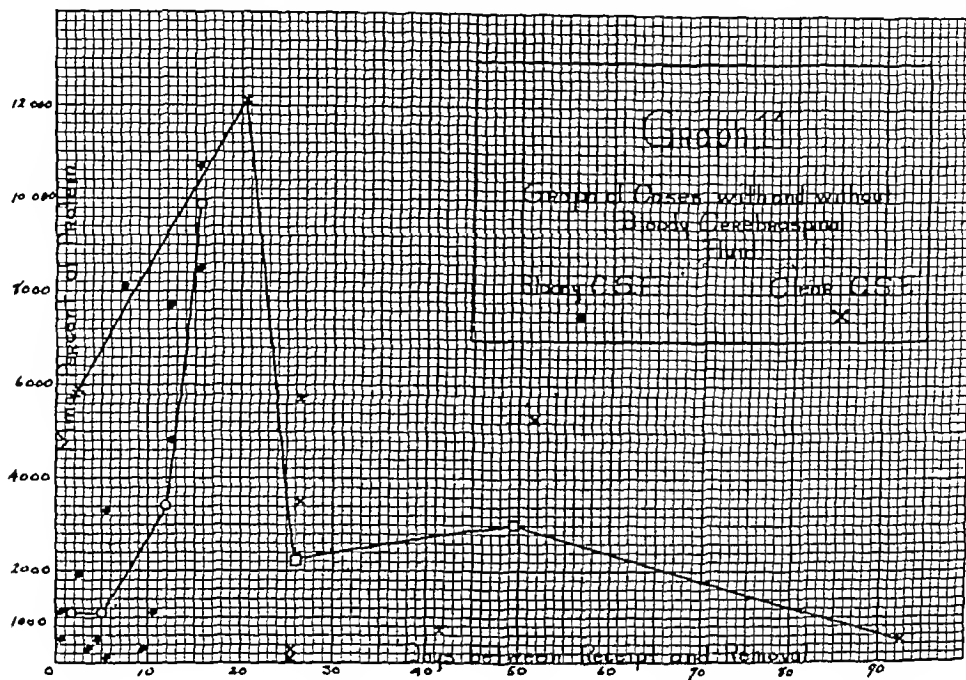
period during which the protein concentration of the fluid part of the clot increases. This is due in part to liquefaction of the clot. In addition the protein subsequently breaks down into smaller molecules*. Both these factors produce a rising osmotic pressure within the solution. A peak is then reached and thereafter there is a steady dilution with resultant lowering of the concentration, although at no time up to five and a half years does the subdural protein ever descend to the level of that in the subarachnoid space. This dilution proceeds rapidly by osmosis until blood serum concentration levels are reached. After that the process is slowed up, the rate depending on the proximity of the fluid to a capillary bed with resultant provision for the diffusion therefrom of the end products of the protein destruction. Based on a study of 25 fluids removed at oper-

ation and analyzed for me in F. Fremont-Smith's laboratory I have found that during the first twenty-four hours after injury the protein content averages 1100 mg per cent, the low being 500 and the high 1700. An average peak of 10,200 mg per cent is reached between the fifteenth and twenty-first days. The highest concentration occurred on the twenty-first day and was 12,168 mg per cent which is almost double that found in blood serum. Thereafter the fall is rapid to the twenty-seventh day, the average content at this time being 2200 mg per cent. From this point to the ninetyeth

day the fall is much slower with a shrinkage of only 700 mg per cent. Even at five and a half years the protein concentration in one case was still 140 mg per cent. On these figures, which are admittedly too few to be finally conclusive in detail, it seems to me fair to assume that there is a liquefaction and breakdown of the clot extending from the first to between the fifteenth and twenty-first days. This solution then becomes more and more diluted, rapidly for the first ten days and progressively more slowly thereafter, without ever actually reaching the low concentration level of the cerebrospinal fluid even after five and a half years. The corollary to this process of dilution is necessarily an increase in the amount of the diluted fluid and therefore an increase in the size of the hematoma. This is expressed clinically in terms of symptoms of an expanding lesion and occurs without necessarily any further addition in the form of secondary or late hemorrhages. Blood in the cerebrospinal fluid (graph 2) as found at lumbar puncture does not essentially

In one case simultaneous determination on the subdural fluid and blood serum on the day of operation gave the following comparative figures—serum protein 2200 serum $\text{N} \text{ P} \sim 28$ serum chloride 601 subdural protein 6300 subdural $\text{N} \text{ P} \sim 33$ subdural chloride 605. Such figures can only be accounted for by the breakdown of protein within the subdural fluid.

alter the shape of the graph though the findings are less convincing because the cases are fewer in number. This is likewise true (graph 3) when the cases in whom a clot was proved to be present are segregated from all others and that the graph may be false and with added experience may well conform to the shape of the others. Such as it is however, this graph has an initial rise that is so abrupt as to be almost perpendicular. In addition the level of



plotted. Even the high point of the peak is approximately at the same level in all curves.

When the cases in whom at operation a subdural clot was grossly absent are considered, however, there is an interesting variation. To be sure this is only a tentative suggestion because the number of cases involved is so few

the peak is some 4000 mg per cent lower than the others while the low level of slow dilution is reached much earlier. The protein concentration is much less at the start (200 as compared to 1200 mg per cent), the peak is reached between the fifth and tenth days instead of the fifteenth to twenty-first and the abrupt part of

the dilution curve reaches its point of leveling off at the twenty-first instead of the forty-seventh day. These cases are similar to those heretofore known as "hydrops of the subdural space." My feeling pending further data is that they rather represent a condition in which the subdural space has been filled with a very small amount of hemorrhage and a relatively large amount of cerebrospinal fluid which for want of better explanation we may presume has come there through a tear in the arachnoid membrane. A minimum amount of this blood has clotted but the rest has remained at first mixed with and then in solution, in the cerebrospinal fluid. Such reasoning is supported by the abrupt rise in the first part of the graph and the lower level of the protein value at the peak. Dilution then proceeds more rapidly because there is no further solution taking place as illustrated by the steeper slope and earlier low point of the second part of the curve. Such cases should have as a class a minimum latent period and if any of the symptoms of increasing intracranial pressure develop they should be relatively mild in character.

From a consideration of the above clinical and chemical evidence, particularly when viewed in the light of Gardner's experimental work I believe that we may reasonably look upon subdural hematomata as potentially expanding le-

sions. The length of the latent period will be related to the amount of cerebrospinal fluid mixed with the blood at the time of the injury, the rapidity of the liquefaction and molecular breakdown of the solid clot, the thickness and nutrition of the organized capsule of the hematoma which surrounds the central liquefied area and the approximation of the latter to a capillary bed. These relationships will be in an inverse ratio, i.e., the greater the amount of cerebrospinal fluid admixture the shorter the latent period, etc. Furthermore under such conditions it is probable that a certain number of hematomata in which the process of repair rapidly outdistances the process of destruction will remain almost completely solid for long periods, even months or years. On this basis it is evident that the pathological picture of chronic subdural hematoma is but a late variant of the acute phase and that at the late stage the hematoma may be liquid or solid or both depending upon the osmotic relationships that have been formed.

DIAGNOSIS In my experience the diagnosis of subdural hemorrhage can be made only by exploration. I believe that this procedure is always indicated in those cases in whom adequate treatment for one of the commoner craniocerebral injuries fails to bring about improvement (Chart III). To be sure it is inevitable that in

CHART III

DIAGNOSIS

Skull	{	Linear and/or Comminuted Fracture					
		Depressed Fracture					
		Compound Fracture					
		Special Fractures	{	Involving Para Nasal Sinuses			
				Middle and/or External Ear			
		Including Pneumo-encephalocele					
		Cribriform Plate					
		Bullet Wounds					
Brain	{	Concussion					
		Edema					
		Contusion and/or Laceration					
		Special	{	Hemorrhage	{	Sub or Extra	Dural
		Special	{	Rarer Forms	{	Sub-Pial Sub-Cortical Intra Ventricular Rupture of Venous Sinus Cortical Abscess Multi Petechial	
		Scalp	{	Lacerated and/or Incised Wound			
Contusion							
Hematoma							
General Bodily Condition	{	Surgical Shock					
		Exhaustion					
		Dehydration					

any such exploratory procedure there will be a certain number of unnecessary operations. In this type of case, however, I believe that a properly conceived procedure carried out in an adequately equipped clinic after the patient is out of surgical shock alters little if at all his chances of recovery should it prove to have been unnecessary. On the contrary if a hitherto unrecognized clot is found, his chances are immeasurably improved. The procedure should consist of a trephination of both squamous temporal bones under local anesthesia with sufficient enlargement of the bony opening to permit of subdural exploration with a brain spoon in all directions. During 1933 such a procedure has been carried out in my clinic fifty-one times. In twelve of these no sub- or extra-dural blood was found. Of these twelve, eight were suffering from a lacerated brain or intracortical hemorrhage of such nature that operative interference could accomplish nothing, but no case so far as could be told succumbed because of the operation.

Subjective Symptomatology Historical data as compiled from the records of these patients with subdural blood are interesting and suggestive but of little selective diagnostic value.

only fifteen times in this series. The shortest of these was two hours which occurred twice and the longest two and a half years. The other times were one day three times, two days twice and three, five, six, seven, forty-two, fifty-two and eighty-four days. To be sure there were other cases in whom it was impossible to determine either the time of injury or the time of onset of symptoms, but even with these included the number is only twenty-three or approximately one third of the total. Convulsions have been conspicuous by their absence. Having in mind the location of the lesion this finding has been rather surprising.

We may conclude then, that patients suffering from a subdural hematoma will present a history of injury to the head followed in practically every case by some degree of unconsciousness and very often by headache. Their friends and family will subsequently note peculiar actions and speech which on analysis will be found to be due to abnormal mental activity. If the clot is not too large and the original injury is trivial, a latent period with mild or no symptoms may follow. This may be absent or may vary in length up to years but it need not therefore be concluded that more than the original hemor-

CHART IV
SYMPTOMATOLOGY—SUBJECTIVE

	History of Injury	Loss of Consciousness	Headache	Convulsions	Mental Change	Latent Interval
Positive	52	55	32	13	57	15
Absent	8	5	1	45	4	39
No note	2	2	29	4	1	8

(Chart IV) A history of injury was practically constant and where it occurred was severe in three-fourths of the cases. Loss of consciousness was even more common, occurring in association with each injury and in addition three times where no such history was obtainable. Headache was definitely absent only once, being definitely present in about half the cases. Its presence or absence was unascertainable in the rest of the cases because of unconsciousness. Such symptoms are common to almost all forms of brain injury however.

Mental changes other than unconsciousness and sufficiently obvious to be recognizable by family or friends were unexpectedly frequent. This appears to be one symptom whose presence definitely suggests subdural hemorrhage. A "latent interval", usually defined as the time that intervenes between the receipt of the injury and the onset of symptoms, has been commonly accepted as an essential finding in this condition. I believe the importance of its presence has been much overrated. This is undoubtedly due to the fact that the conception of the acute subdural hematoma as a clinical entity has been completely overshadowed by the intense study of its late form. Such a latent period occurred

rhage has occurred. These patients will only rarely have convulsions.

Objective Symptomatology (Chart V) This is no more selective than the subjective. However abnormalities are sufficiently common so that if physical and neurological examinations are carried out enough will be found to justify hospitalization immediately after the injury. The blood pressure was elevated 21 times. This was in each case due to the increased intracranial pressure and subsided again to normal levels after removal of the clot. However it was normal even more often, so that elevation is by no means essential in making the diagnosis. Some abnormality on physical examination pointing to an injury was found in 49 of these patients. Easily elicited signs of alterations within the nervous system were found fifty-eight times. Recognizable mental changes were most common (fifty-three) although signs of interference with the neuromuscular apparatus occurred almost as often (fifty). Paralysis in the cranial nerve fields was present thirty-six times. Twenty-six of these were in the facial distribution. This is evidence of the usual site of the clot. Abnormalities were recognized in the eyegrounds only ten times. An ipsilateral di-

lated pupil has been described by several authors⁹⁻¹⁰ as a reliable localizing sign in these cases. This is contrary to my experience. Twenty-five showed no dilatation at all, fourteen were dilated on the side opposite the hemorrhage, three were dilated bilaterally and fourteen on the ipsilateral side.

We may conclude then from the examination of the patient that if his blood pressure is normal or elevated, his physical and neurological examinations abnormal, if he shows mental changes and has a paralysis of one facial nerve,

headache, mental changes, an abnormal physical and neurological examination, a paralysis of one facial nerve and a bloody cerebrospinal fluid under increased pressure and who can subsequently have a latent period free of symptoms, may have a subdural hemorrhage. If improvement of these signs and symptoms does not follow proper treatment by dehydration and lumbar puncture, this diagnosis should be confirmed or ruled out by a bilateral exploratory subtemporal trephine. It is equally true that if, in a patient known to have a lacerated brain,

CHART V

SYMPTOMATOLOGY—OBJECTIVE

Blood Pressure	{	Elevated	21	Dilated Pupil	{	Ipsilateral	14	Neurological Examination	{	VII — 26 II — 10 VIII — 2 V — 1 III — 2 VI — 1 XII — 1
		Normal	33			Contralateral	14			
		No notes	8			Bilateral	3			
General Physical Examination	{	Normal	12		{	Negative	1			
		Abnormal	49			Motor	50			
		No note	1			Mental	53			
			Cranial Nerves	86						

he is liable to be suffering from a subdural hematoma. If he has one dilated pupil it is as likely to be on the side opposite the clot as it is to be ipsilateral.

CHART VI
CEREBROSPINAL FLUID

	Pressure at First Lumbar Puncture		Protein Content	
	Bl or Yellow	Clear	Bl or Yellow	Clear
Increased	18	16	14	3
Normal	10	2	6	5
Decreased	1	1	—	—
Not done			33	1
Not given	14			

Cerebrospinal Fluid (Chart VI) Examination of the cerebrospinal fluid will serve only to identify the presence of an increased intracranial pressure and blood from an associated contused or lacerated brain. A little more than half of these cases had a high intracranial pressure and a few less than half had evidence of subarachnoid bleeding. The protein content was increased only in the presence of fresh or old blood and never approached the levels found in the fluid collected from the subdural space.

On the basis of all the above findings I feel that a patient who has been knocked unconscious following a blow on the head, who has a

the neurological signs fail to clear up, unconsciousness deepens, delirium or mania develops, the pulse drops to below sixty and the cerebrospinal fluid gets less bloody even though the pressure may be either high or low, some additional and hitherto unrecognized condition must be present. If study of the fluid intake and output relationships and determination of the sugar and cellular content of the cerebrospinal fluid rules out toxic dehydration and meningitis, bilateral exploratory subtemporal trephine is the only remaining method of disproving the added presence of such a sub- or extra-dural hemorrhage.

TREATMENT It is unanimously agreed that once the diagnosis is made and the patient is no longer in a state of surgical shock, the treatment of subdural hematoma is exclusively surgical. Opinions regarding the best technical method to use are still divided, however. Coleman¹¹ who reports the next largest personal series advocates large decompressions in the acute, and osteoplastic flaps in the chronic types. Putnam¹² prefers an osteoplastic flap though recently he has discarded this for a decompression in acute cases. McKenzie¹³ has used the flap method in the past but has abandoned it in favor of small trephine holes with tube drainage. Fleming and Jones¹⁴ in eight cases used through and through irrigation between trephine holes placed front and back. There is also a great

variation in opinions relative to the value of complete as opposed to incomplete removal of the clot and membranes. On the other hand drainage, especially in association with decompression, is popular.

I believe that the most effective procedure is the one that is easiest and quickest and that still gives an adequate exposure. In addition if it can be made to, it should be so designed as to be of use during the postoperative period. These criteria are best fulfilled by the ordinary subtemporal decompression. This is true, however, only when the bony and dural opening is extended to the limits of the squamous portion of the temporal bone. This operation can be done easily and rapidly and is centered over the most common site of these lesions. The entire cerebral subdural space can be adequately explored and therefore the entire extent of the clot can be removed, preferably by suction. In addition the degree of tenseness of the scalp over the decompression opening will be of help in the early recognition of an increased intracranial pressure.

Drainage of the subdural space should be practised. This will be necessary, not on account of any secondary hemorrhage, but because it is impossible to completely remove all the abnormal content of the space at the time of the operation. It will not always prove efficient, however, because the tract may be completely closed within a few hours by the swollen cortex. A possible exception to this may be noted if a tube drain is used as recommended by McKenzie.

I believe that the entire clot should always be removed. One of the cases in this series died because this precaution was neglected. If exploration of one side fails to reveal any pathology the other side should be invariably opened regardless of any of the symptoms that have been present. In the presence of a complicating contusion or laceration of the cortex, irrigation with salt solution should be avoided. In two cases a local edema was produced in a previously normally pulsating brain in this way. It developed so rapidly that it interfered greatly with the closure and it was necessary to give hypertonic glucose solution intravenously while the wound was still open to prevent further splitting of the cortex. A very common but not constant complication is a severe edema of the cortex. This may be limited locally and not cause any general increase in intracranial pressure. In such cases lumbar puncture drainage is useless and the large decompression is a great help which I am sure enhances the effect of the dehydrating agents that must be used. If the edema is generalized and the intracranial pressure rises, the safety valve action that is provided is also distinctly useful in association with lumbar puncture drainage. A possible

cause of this edema is the overexpansion of the previously compressed brain in an effort to fill the abnormal space left after removal of the clot. In this connection Henschen⁴ advocates the intravenous administration of sterile water on completion of the operative procedure. This is an interesting suggestion and quite at variance with all others that have been made for solving this particular problem. I know of no one else who has had experience with it.

In my hands this postoperative edema has been best treated by 50 per cent glucose intravenously, 100 cc at a time. This dose may be repeated every two hours for five doses if necessary. Caffeine given in the same way is also useful if the respirations begin to fail. It is of no help when given by other methods. As a last resort 200 cc of a sterile 2 per cent solution of MgSO_4 can be given intravenously. This is heroic treatment and dangerous. It must be given slowly and, if efficient, will produce a toxic dehydration which of itself may be fatal. This is only of use if there is an adequate circulation. If hyperthermia develops, cracked ice enemas and warm sponges followed by the exposure of the entire body surface to a gentle steady breeze from an electric fan has accomplished a great deal.

This edema is a most alarming and serious complication. Its successful treatment requires constant attention on the part of the physician and the use of all possible and reasonable procedures. Reoperation is contraindicated however. It should be further noted that as the result of the therapy, a toxic dehydration may set in, which in its turn will require active interference. On this account an accurate daily chart of the fluid intake and output must be kept. Of the thirty-nine cases subjected to such operative and postoperative care as outlined above, sixteen died, a mortality of 41.2 per cent. This is of course high, but is not to be

CHART VII

MORTALITY

	Total Cases		Mortality Per centage
	Living	Dead	
Without operation	0	22	100%
With operation—Neurosurgical	23	16	41.2%

considered in comparison with the 100 per cent mortality that follows failure to recognize the frequency of this condition until it is discovered by the pathologist.

ILLUSTRATIVE CASE REPORTS

ETIOLOGIC AND PATHOLOGIC VARIATIONS

Rupture of Cortical Bridging Vein No. 23. A case of right temporoparietal subdural hematoma caused by rupture of bridging cortical vein following a

homicidal blow kindness of Dr Timothy Leary
This young adult white male was admitted to the hospital on a medical service Sept. 28, 1932 after having been discovered unconscious by the police ten minutes previously. The admission diagnosis was alcoholism. Subsequent investigation showed that he had been last seen the previous night and was normal in every way at that time. On admission he was in moderate shock with flushed face and an odor of alcohol on his breath. Temperature 98° pulse 90 and respirations 32. Physical and neurological examinations were negative except for abrasions and contusions of the forehead, the lips and mucous membrane of the mouth and the left upper and lower eyelids. Death ensued in a few hours. Autopsy showed a large right temporoparietal subdural hematoma caused by the rupture of a vein which ran from the surface of the temporal lobe to the adjoining dura. There was no fracture of the skull and no injury to the brain.

Lacerated Brain with Cerebral and Cerebellar Hematomata and Bloody Cerebrospinal Fluid No 58
A case of right cerebral subdural hematoma together with a cerebellar subdural hematoma caused by the tearing of cortical vessels in association with contusion and laceration of the brain operative removal of the cerebral hematoma. Death eleven days later with discovery of the cerebellar hematoma at autopsy. This thirty-eight year old white male who was said to be a "bleeder" was admitted on October 27, 1933 with the history of having gone on a "drinking party" nine days before. The following day he was stuporous and restless. Lumbar puncture showed bloody cerebrospinal fluid under a pressure of 280 mm water. With repeated punctures for the succeeding six days he at first improved and then gradually lapsed into coma again. On admission his temperature was 101.4° pulse 84 respirations 25 and blood pressure 132/102. There was a dilated right pupil, a spastic left arm and a weakness of the entire right side. There was a bilateral ankle clonus and dorsiflexion of both great toes. A right subtemporal decompression was made and through it a liquefied subdural clot completely surrounded by membrane and covering practically the entire right cerebrum was removed. The fluid portion showed 7724 mg per cent of protein and the membrane was that of a subdural hematoma with well organized new membrane formation. The patient improved for twenty-four hours and then lapsed back into coma. The intracranial pressure rose to and remained around 250 in spite of seven lumbar punctures. As a result on Nov. 1, 1933 an exploratory left temporal trephine was made. The brain was flattened and did not pulsate but was otherwise normal. Puncture of the lateral ventricle showed clear fluid under abnormally high pressure. The removal of which was followed by pulsation of the brain. Unconsciousness continued however to be followed by bouts of hyperthermia and a left sided convulsion four days later. Two days later hypostatic pneumonia and death ensued. Autopsy showed a bilateral cerebellar subdural hematoma.

Cerebral Subdural Hematoma with Clear Cerebrospinal Fluid an Ipsilateral Hemiparesis and Epilepsy No 16
A case of left fronto-parieto-temporal subdural hematoma caused by bleeding from an unidentified source following an injury sustained during an epileptic seizure. Bilateral subtemporal exploration with left decompression and removal of a fronto-parieto-temporal subdural hematoma. This twenty-seven year old white single male who was known to have had generalized epileptic convulsions for at least ten years was admitted for the third time in three years on September 12, 1933. The epilepsy has remained stationary for three years except for a

moderate slowly progressive mental deterioration. Twenty-six days before admission he fell striking his head. A rather constant occipital headache, nausea and vomiting and increasing drowsiness followed. Examination revealed a vertical nystagmus, a left hemiparesis including the face, a tendency to hold the right arm in a catatonic posture and a dry skin and tongue. There were no abnormal reflexes but there was a slight irregularity of the left pupil. Lumbar puncture showed clear fluid with no cells under a pressure of 140 mm water. On September 12, a right-sided subtemporal exploratory trephine revealed a normal brain under increased pressure with marked edema and flattening. A left-sided subtemporal decompression disclosed a clot over the anterior two thirds of the hemisphere lying in the subdural space and solid except for a liquefied area in the centre. This was removed including the membranes. The patient made an uninterrupted recovery and was discharged on Sept. 25, 1933, 13 days after admission. Microscopic examination of the membrane showed a well-organized subdural hematoma and chemical examination of the fluid part of the clot yielded a protein of 5340 mg per cent.

A Combination of Cerebral Subdural Fluid on the Right and a Cerebral Subdural Hematoma on the Left with clear colorless Cerebrospinal Fluid No 8
A case of right sided cerebral subdural fluid without clot in combination with a left sided cerebral subdural hematoma following an injury sustained playing football. Drainage of the right subdural space with decompression, attempted ventriculogram which was followed twenty-five days later by removal of a right frontotemporal subdural hematoma and a right sided decompression. Recovery with permanently increased intracranial pressure. This eleven year old white boy was referred by Dr. Chute of Osterville and admitted on December 8, 1932. He was injured during a football game on November 17, 1932 but was never unconscious. During the following week he developed a headache though he continued at school. Subsequently his headache grew worse he vomited, became semiconscious and was disoriented. The physical and neurological examinations were negative except for his mental state, an early choking of the discs, a weakness of the left external rectus muscles and a right pupil that was larger than the left. Lumbar puncture yielded clear fluid under a pressure of 300 mm water with protein of 27 mg per cent and a sugar of 87. On January 1, 1933 a right subtemporal decompression was made and a large amount of clear yellow fluid removed from the subdural space. The brain was compressed and the arachnoid firmly plastered against the pia. No clot was visible anywhere. The fluid was neither measured nor examined. Following this procedure he was symptomatically better but continued to run an intracranial pressure of about 250 mm water in spite of almost daily lumbar punctures. On January 20, ventriculogram was attempted but the films were unsatisfactory. Lumbar punctures were continued with out further improvement until February 14, 1933. On this date a left subtemporal decompression was made and through this a thick walled cyst covering the temporal lobe was emptied of one and one fourth ounces of thick serum like fluid. The collapsed cyst wall which was unquestionably that of an old organized hematoma was then removed. Microscopically the cyst wall was that of a well-organized subdural hematoma. The fluid contained 666 mg per cent of protein. Following this the patient's symptoms and signs completely cleared up except for a persistent elevation of intracranial pressure to about 250 mm water. In spite of this he was discharged symptom free on March 5, 1933.

Cerebral Subdural Fluid with a Lacerated Brain

and Bloody Cerebrospinal Fluid but no Hematoma No 37 *A case with a collection of brownish yellow subdural fluid over the left cerebral hemisphere associated with a laceration of the brain following an automobile accident Bilateral exploratory trephine with left decompression and drainage of the left subdural space Recovery* This thirty five year old white male was admitted to a general surgical service on April 12, 1933 following an automobile accident. He was unconscious and remained so for two days. There was a compound fracture of the left frontal region, bloody cerebrospinal fluid under a pressure of 450 mm water, a left facial paralysis and a pulse between 50 and 60. He was irrational, delirious, restless and apparently aphasic. On April 18 he was transferred to the neurosurgical service on account of deepening coma and failure to improve under dehydration and repeated lumbar punctures. After a period of observation and treatment to rule out the possibility of toxic dehydration a left exploratory subtemporal trephine was made and enlarged to a decompression. Through this opening a large quantity of thick yellow brown fluid escaped from the subdural space. This fluid contained 4300 mg per cent of protein. After its removal it was possible to survey the lateral surface of the entire hemisphere. This was stained a deep chrome yellow. The subarachnoid space which at first was completely empty gradually refilled, and a small laceration of the surface of the temporal lobe was discovered, but nowhere could either a hematoma or the membranes of a liquefied hematoma be found. A similarly placed exploratory trephine was made on the right side but the brain and its membranes were normal. His signs and symptoms completely cleared up and he was discharged relieved May 8, 1933, 24 days after admission.

Cerebral Subdural Hematoma with a Protein Content of the Liquefied Clot almost Double that of Normal Blood Serum No 49 *A case of right cerebral subdural hematoma from an unknown source which developed following a recent drinking bout in a chronic alcoholic who also had cardiovascular syphilis. A bilateral subtemporal decompression with evacuation of a partially liquefied subdural hematoma was followed by relief of symptoms and discharge eleven days after operation.* This fifty two year old white male was admitted to a medical service on October 19, 1933 because of vomiting and stupor. He had previously been admitted to the alcoholic ward several times. He stated that he had been drinking continuously for five days and that for three days he had been feeling depressed, and had had a pain in the back of his head. This pain followed a fall down two steps which occurred three weeks previously. He presented a right sided weakness bilateral Babinski's thick mumbling speech incontinence and irregular but equal pupils. He had a blood pressure of 172/102 with an enlarged heart with a systolic murmur at the apex, aortic area and neck. His blood Kahn was positive. On October 20, 1933 he was transferred to the Neurosurgical Service and on October 21, 1933 bilateral subtemporal decompressions were made, the brain on the left being flattened and edematous. On the right there was a partially liquefied "currant jelly" subdural hematoma covering the entire lateral aspect of the hemisphere. No laceration or other source of the hemorrhage was found. Following this operation and a period during which he was in surgical shock his symptoms and signs cleared up. His intracranial pressure which before operation was 350 mm water with clear fluid fell to 170 mm water and he was discharged relieved on November 1, 1933 ten days after operation.

UNUSUAL SUBJECTIVE SYMPTOMATOLOGY

A Fatal Case of Extensive Acute Cerebral Subdural Hematoma with no History of Injury No 44. *A case of large left cerebral subdural hematoma following one hour after swimming and the ingestion of a heavy meal, and associated with acute vascular hypertension. Operative removal through a left subtemporal decompression followed by rapidly advancing postoperative cerebral edema, circulatory failure and death.* This fifty nine year old white male was admitted to a medical service on August 2, 1933 with a history of headaches for three to four years from an undetermined cause and with a known systolic blood pressure for the past year of only 135. Ten days before admission, after swimming and a heavy meal, he had a severe headache and fainted. It was categorically stated that he had had no fall or other injury at any recent time, nor before, during or after swimming. On examination he was stuporous with a blood pressure of 220/110, a dilated left pupil, early choking of the discs, a bilateral Babinski and a left sided weakness including the tongue and face. Lumbar puncture showed a xanthochromic fluid with eight lymphocytes and no red blood cells, under a pressure of 250 mm water. He was transferred to the Neurosurgical Service the following day and operated upon at once. A left subtemporal decompression was made and a "currant jelly" subdural clot which covered the entire lateral surface of the hemisphere was removed. This was thickest and most adherent over the occipital cortex but no source for the bleeding could be found. One hour after operation his temperature rose to 102 and his pulse dropped to 60. The blood pressure was only 70/40. A lumbar puncture showed a cerebrospinal fluid pressure of 700 mm water which fell to 30 following the removal of 10 cc of yellow cerebrospinal fluid. Following this and the administration of 150 cc of 50 per cent glucose intravenously his pulse rose to 80 and blood pressure to 155/100. One and one half hours later a similar collapse occurred. Two hundred cc of 2 per cent magnesium sulphate solution was given intravenously with slight general improvement and a rise of blood pressure to 130/90. However circulatory failure set in his lungs filled up and he died twelve hours after the operation. Autopsy showed no further subdural bleeding.

Cerebral Subdural Hematoma in a Patient Who Had Been Committed to a Psychopathic Hospital as 'Alcoholic Psychosis' and Who Completely Recovered Following Removal of the Hematoma. No 62 *A case of right cerebral subdural hematoma following a fall on the street. Development of mental symptoms that led to commitment to a psychopathic hospital for an observational period. Admission on medical service as lead encephalopathy. Operative removal of right cerebral subdural hematoma with discharge free of symptoms seventeen days later.* This forty seven year old white male house painter was transferred from the medical service to the neurosurgical service November 22, 1933. He was a known chronic alcoholic. On October 20, 1933 he was brought home drunk following a fall on the street which had caused a laceration of his scalp. The following day he was sent by the police to a psychopathic hospital on account of disorientation and confusion. During the following two weeks at this hospital he became increasingly stuporous. Stippling was found once in his red blood cells and following the development of a left hemiplegia he was transferred to the Boston City Hospital on November 20, 1933 as a possible lead encephalopathy. On the medical service the stippling could not be confirmed but a lumbar puncture yielded yellow fluid under a pressure of 200 mm water. He did have an anemia which however, proved to be due to

fifteen years of bleeding hemorrhoids. On transfer to the Neurosurgical Service he was in coma with a flaccid left hemiplegia, hypertonic right arm and leg, bilateral hyperactive tendon reflexes, a right Babinski and a dilated left pupil. His blood pressure was 154/94. A right subtemporal decompression was made and a partially liquefied subdural hematoma covering the frontotemporal region was removed. The subarachnoid space contained yellow fluid and the cortex was colored dirty brown and was compressed. The fluid clot contained 10631 mg per cent of protein and microscopic examination showed the solid clot to be that of a well-organized subdural hematoma. He was discharged to the surgical side for treatment of his hemorrhoids free of all other signs and symptoms seventeen days later.

Subdural Fluid Abnormal Bridging Vein and Epileptiform Seizures after a Four Year Latent Period No 34 *A case of right cerebral subdural fluid associated with delirium after a four year latent period. Exploratory craniotomy with drainage of the subdural space division of an abnormal "bridging vein" and relief of symptoms to date for one year.* This thirty-one year old white male was admitted on April 1, 1933, because of attacks of headache associated with delirium and unconsciousness. These have been present at infrequent intervals for the past one and a half years. Six years ago he was unconscious for two hours following an automobile accident in which he sustained a lacerated wound of the scalp. On admission he stated that he was unable to work on account of his attacks. Neurological and physical examinations were negative except for a scar in the right parieto-occipital region and hyperesthesia and atropognosis on the left. During an attack in the hospital he complained of numbness of the left side, inability to move his left leg and weakness of his left arm. Lumbar puncture was not done. On April 17, 1933, a right parieto-occipital bone flap was turned down exposing a dura that did not pulsate and from beneath while from the subdural space a considerable quantity of yellowish fluid was collected. This had a protein content of 140 mg per cent. After the subdural space was emptied the brain began to pulsate and exploration of the cortex disclosed a large venous connection between the dura and the posterior parietal subcortical region which anchored the cortex at this point. This was divided and the flap replaced. The patient made an uninterrupted recovery except for a slight necrosis of the posterior medial edge of the scalp flap and has remained free of attacks to date, having been discharged from the hospital ten days after operation.

Subdural Hematoma Associated with Increasing Irrationality and Disorientation Culminating in Active Delirium and Complicated by Extreme Therapeutic Toxic Dehydration following Operation *See under postoperative complications case No 10*

UNUSUAL OBJECTIVE SYMPTOMATOLOGY

Right Hemiparesis and Hemianesthesia With Choking of Right Disc But Without Any Speech Difficulty *Removal of Subdural Hematoma from the Floor of the Left Middle Fossa With Subsequent Discovery that Patient Was Left Handed No 33* *A case of left temporal subdural hematoma following an automobile accident. Left subtemporal decompression and removal of the hematoma after patient had failed to improve under lumbar puncture and dehydration therapy with complete relief of symptoms.* This twenty-six year old white male was injured in an automobile accident on March 31, 1933. He was unconscious and had a lacerated wound of the scalp. Following eight lumbar punctures in six days he regained consciousness but complained bit-

terly of a severe headache. These punctures all showed bloody fluid under pressure varying from 450 to 250 mm water. On this day he was admitted to the Neurosurgical Service being referred by Dr. B. Gallagher of Waltham. Examination showed an apathetic man with slight right-sided weakness and right-sided hypesthesia. There was very early choking of the discs. The blood pressure was 120/40. The following day a left subtemporal decompression was made and through this a considerable quantity of bloody subdural fluid removed. This was not examined chemically. Because this failed to give the expected relief of the intracranial tension a further search was made and a large subdural clot evidently originating from a lacerated area in the adjoining cortex was found lying on the floor of the middle fossa beneath the temporal lobe. This was removed with return of the intracranial pressure to normal. The patient was discharged relieved and free of symptoms eighteen days after operation.

Decreased Cerebrospinal Fluid Pressure in a Case of Bilateral Cerebral Subdural Hematomata No 57 *A case of bilateral cerebral subdural hematomata associated with confusion of the brain and unilateral dilation of the pupil following an injury during a period of acute alcoholism.* This fifty-one year old white male was admitted to a general surgical service in what was believed to be an alcoholic stupor on October 13, 1933. He had a lacerated wound of the scalp which was sutured. A lumbar puncture was reported as showing normal fluid under normal pressure. The next day he was conscious and was up and about the ward but was noticed to be mentally abnormal. He was restless with irrelevant speech and tended to avoid the other patients. Sixteen days after admission he suddenly became deeply unconscious. A lumbar puncture showed a pressure so low as not to be measurable though old bloody fluid was obtained by suction. Examination showed a dilated right pupil, a bilateral spasticity of the extremities with increased reflexes, ankle clonus and Babinski's. The blood pressure was 150/95 and the pulse 88. A second lumbar puncture eight hours later was similar to the previous one. This hypotension was believed to be due to dehydration from his failure to drink enough liquid. Blood and spinal fluid Kahn's were negative. He was transferred at once to the Neurosurgical Service and operated within an hour. A left subtemporal exploration was made with the resultant escape of yellow fluid and clots from the subdural space with a resumption of pulsation of the cortex. A similar exploration was carried out on the right and enlarged to the size of a decompression. Through this was removed an encapsulated partially liquefied subdural hematoma which covered the entire lateral surface of the hemisphere. The liquid portion had a protein content of 8510 mg per cent and microscopic examination of the walls was reported as showing an organized subdural hematoma. The brain was confused. He remained unconscious until his death. Two days after the operation he developed left-sided convulsions and four days postoperatively a lumbar puncture showed a pressure of 125 mm water. The convulsions continued, his circulation began to fail and he died from this latter cause on November 4, 1933, six days after operation. Autopsy showed his brain damage to be much more extensive than had appeared at operation with no further significant subdural bleeding. The cause of death was given as brain injury.

See also for Ipsilateral Hemiplegia under 'Etiology and Pathology' Case No 46 and under 'Subjective Symptomatology' Case No 44.

THERAPY

Right Cerebral Subdural Hematoma Not Found Because of Failure to Explore Both Sides of the Skull

No 43 A case of right cerebral subdural hematoma associated with sudden unconsciousness during imprisonment for a charge of drunkenness Left subtemporal exploration—nothing found Death Subdural hematoma on right This sixty seven year old white male was transferred from the jail on August 8, having been imprisoned seven days previously on a charge of drunkenness. He had been found unconscious on the floor of his cell after having been reported as well two hours previously. On admission he was deeply comatose with Cheyne-Stokes respiration, spasticity of all extremities with hyperreflexia, Babinskis and ankle clonus. There was an old bruise on his face. Lumbar puncture yielded bloody fluid under a pressure of 120 mm water. The blood pressure was 220/120, pulse 100 and of poor quality. A left temporal exploratory trephine was made which showed nothing but a tense edematous, non pulsating brain. The right side was not done as it was hoped that his condition would improve and he could be again operated upon later. His condition continued to get worse however and he died without regaining consciousness three days after operation. Autopsy showed a large right cerebral subdural hematoma.

Death Due to Primary Incomplete Removal of a Right Subdural Hematoma No 41 A case of right cerebral subdural hemorrhage from a contused brain which was operated upon twice, the removal having been incomplete after the first interference Death followed the second operation This thirty-eight year old white male was brought to the hospital by the police because of presumed intoxication and a scalp wound on July 16, 1933. The wound was sewed up and he was sent home with his brother. He was brought back in deep coma the following day and admitted to the general Surgical Service. Two lumbar punctures showed bloody fluid under a pressure of 175 mm water. He was delirious and required restraint. He was transferred to the neurosurgical service at once and operated upon within three hours. A small right subtemporal decompression was made and a clot removed from the exposed subdural space. The left side was also explored but no pathology was found. He was markedly improved for two days followed by a rise in intracranial pressure renewed stupor and respiratory irregularity. He was at once taken to the operating room and the left side reopened with negative findings. The right side was then reopened and the decompression and dural opening enlarged. This permitted more complete exploration and resulted in the discovery and removal of 30 to 50 cc additional clot that had been missed at the previous exploration. The patient continued to go downhill and died five hours after the operation from acute cerebral edema and circulatory failure. Autopsy revealed no new pathology.

POSTOPERATIVE COMPLICATIONS

Acute Rapidly Advancing Postoperative Edema—see section on "Subjective Symptomatology" case No 44

Therapeutic Postoperative Dehydration Made Necessary by the Occurrence of Acute Postoperative Edema. No 10 A case of right cerebral subdural hematoma resulting from a contusion of the brain caused by a fall. Operative removal rapidly advancing postoperative edema therapeutic toxic dehydration, recovery This thirty five year old white man was admitted to the neurosurgical service on Feb 21 1933. He was injured on Feb 10 1933 following a fall of fifteen feet onto a concrete floor. He was unconscious for nine hours during which time he was taken to another hospital. On regaining consciousness his head was x-rayed found to have no visible fracture, following which he was discharged to his home on Feb 12 1933 with a diagnosis of 'concussion'.

Since then to the present he had had increasingly severe occipital headache and increasingly frequent and prolonged periods of irrationality. On admission he showed early choking of the discs, nystagmus, stiffness of the neck and increased tendon reflexes on the left and dilated left pupil. Lumbar puncture revealed bloody fluid under a pressure of 260 mm water. For three days he became progressively more disoriented and delirious and finally reached a stage where it was almost impossible to control his activities. On February 25, 1933 a bilateral exploratory subtemporal trephine was made, the left side being done first. The brain was not pulsating but otherwise no pathology was found on this side. On the right side the trephine hole was enlarged to a decompression and a small temporoparietal "currant jelly" subdural clot together with a considerable quantity of yellow subdural fluid was removed. The source of the bleed could not be found. For twenty four hours following the operation he was much improved but the next day he began to get restless and delirious again. At this time his temperature got to 102° and it was noted that his fluid intake had ranged between 1750 and 3000 cc in twenty four hours. His intracranial pressure was normal and his decompression flat and pulsating. On March 3 his fluid intake was raised to 7500 cc the two preceding days having been pushed to 5000 and 6500 respectively. Coincidentally he became cooperative, conscious with a temperature of 100° and ceased being incontinent. Two days later his temperature was normal, he was oriented and mentally clear, his fluid intake having in the meantime been kept between 6000 and 6500 cc in twenty four hours. From that time his progress was uninterrupted and he was discharged relieved and symptom free March 21, 1933, twenty five days after having been operated upon.

SUMMARY AND CONCLUSIONS

- 1 Subdural hematoma occurs in about one out of every six cases of craniocerebral injury
- 2 Subdural hematoma may be an expanding lesion. In such cases there may be a latent period during which symptoms are absent until the intracranial pressure begins to rise above normal
- 3 The signs and symptoms caused by subdural hematoma are the same as those caused by any other major brain injury. Patients suffering from the latter get better under appropriate non operative treatment. Those suffering from the former condition, however, in the large majority of cases die unless operated upon
- 4 The certain presence of a subdural hematoma can only be determined by bilateral exploratory subtemporal trephine
- 5 Treatment of subdural hematoma can be best carried out through a subtemporal decompression. The entire clot should be removed, drainage should be provided and irrigation in the presence of a contused or lacerated cortex should be avoided
- 6 Postoperative edema is a common and serious complication. Treatment should be early and vigorous and include dehydration, lumbar puncture drainage caffeine and two per cent MGSO₄ intravenously, and appropriate measures to lower the body temperature.

7 Without surgical interference the mortality of twenty-two proved cases of subdural hematomata was 100 per cent. With operative treatment as outlined the mortality in a series of thirty-nine cases was 41.2 per cent.

8 The artificial segregation of certain of the so-called chronic forms of this disease should be abandoned. It has come about only because of our failure to recognize the same condition at the time of its original production.

9 A bibliography covering the ten-year period from 1924 to 1934 and a group of typical case histories are appended.

I am happy to have this opportunity to gratefully acknowledge the stimulus and assistance I have received from Dr. Timothy Leary, Medical Examiner of Suffolk County, Boston, Massachusetts. Without his stimulus the work would never have been undertaken; without his help it could never have been completed.

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DISCUSSION

DR. SAMUEL C. HARVEY, New Haven Conn. I am glad to have the opportunity of discussing this most important paper of Dr. Munro's.

We have been accustomed in the past, I think, to segregate subdural hematomata into two rather sharply defined groups: the one showing the acute middle meningeal hemorrhage syndrome, the other the so-called chronic subdural hematoma with which the patient returns to the surgeon with a cystic type of lesion.

The point of Dr. Munro's paper which I take to be peculiarly significant is the fact that there is an intermediate or bridging type of hematoma which should be picked up in the acute phase and treated at that time. This is very easily said but done with much more difficulty.

Judging from his charts as well as from my own experience the signs and symptoms of this condition are very variable and transitory. They can not be built up into a clear-cut clinical picture. One must depend to a great extent on the course of events. If the patient is improving and continues to do so, he is probably not suffering from a serious subdural hemorrhage. On the other hand if he does not improve promptly or if his progress is downhill then he very likely is. Even then it is difficult to differentiate this condition and the severe "commotion" (if I may use the term) of the brain which may likewise carry the patient progressively downhill.

It is true without doubt that all of us have overlooked the more acute phases of the subdural

hematoma, and it is likewise true that instances of local injury coming to necropsy show a disturbingly high ratio of subdural hemorrhage. Whether all these patients die from such hemorrhage is another question. In many, the underlying fatal pathology is the severe primary injury to the brain itself.

Nevertheless, Dr Munro's paper is a very enlightening contribution and should assist us in discovering a considerable number of these lesions and subjecting them at once to operative treatment.

DR GEORGE A MOORE, Brockton, Mass. Gentlemen, I am not going to attempt to discuss Dr Munro's very interesting paper. This is a specialized zone of surgery that I have felt is not at the present time in the field of the general surgeon. It has been my pleasure to hear Dr Munro discuss this subject once before at the City Hospital and at the same time see Dr Timothy Leary's series of brains with hematomata that were found at autopsy.

I am reminded of what Dr Harvey Cushing said at one time when he was giving a clinic on acromegaly. He stated that it was only a comparatively few years ago that the field of thyroid surgery was limited to a very few specialists in that line of work, but we now see thyroids operated upon by a great many men doing general surgery. He predicted that in a few years we may see surgery of the pituitary gland taken over by the general surgeon.

At present many men in general surgery are not operating on subdural hematomata. Dr Munro has placed special emphasis upon the number of unrecognized cases with this condition which have been observed at the City Hospital. It would appear that the general surgeon should be more on the alert in the care of cases of head injury to recognize symptoms of intracranial hemorrhage.

Of especial significance in Dr Munro's statistics was the large number of patients with abnormal physical signs. There were some thirtysix patients with motor symptoms and about forty patients with mental symptoms. With more painstaking study we should recognize these symptoms in more cases and get these patients into the hands of the neurosurgeons in time to decrease the mortality that now exists.

DR W J MIXTER, Boston, Mass. I think this work of Dr Munro's is very valuable. He has created a lot of interest in the subject which has been reflected not only among the people who are perhaps more interested in neurosurgery but also I think, among the men who are doing general surgery.

I disagree with Dr Moore a bit. I think the general surgeon has to handle a number of these cases because many times the general surgeon will find a case of subdural hematoma among the acute cases in his practice.

We have planned at the Massachusetts General to have our general surgical house officers see the traumatic neurosurgery so far as we can and not confine it to the neurosurgical house officers because we feel that the general surgeon must handle a great deal of the traumatic neurosurgery perhaps not the cases that run along and can be handled as late cases but the acute immediate surgical emergencies.

So far as type of operation goes Dr Munro has well stated that there is a great difference of opinion as to the methods of attack, and I should agree absolutely with him that the subtemporal decompression was the best general method to use. In some instances the trephine opening with evacuation of the fluid blood will work well. I think the osteoplastic flap as a general rule is unnecessary. The subtemporal decompression can be extended either forward or backward and works very well in

these cases. It has seemed to me that there were a certain number of the subdural hematomata that were nontraumatic and arose probably from the small aneurysms of the circle of Willis, much in the same way that the spontaneous subarachnoid hemorrhages do. That is probably not nearly so common as the traumatic origin but I believe does occur in certain instances and I should like to ask Dr Munro for his opinion.

DR LUCIUS C KINGMAN, Providence, R. I. I have seen a number of war wounds of the head which resembled the cases under discussion. The patients entered the base hospital about three days after injury. They would walk in with apparently a simple scalp wound. However, there would be a history of being knocked out at time of injury usually followed by nausea. By the next day they would complain of a restless night, some headache and nausea. With such a story we would open the skull and under the site of the bullet wound we would find a subdural hematoma and often some disintegrated brain. This would be washed out and all made immediate recovery. The after history is unknown. The indication for the operation was made entirely on the history.

DR CHARLES L SCUDDER, Boston, Mass. I have two thoughts in connection with this valuable and timely paper of Dr Munro. It used to be considered that the taking of various specialties out of the general surgical field diminished the usefulness of the general surgeon. It seems to me that Dr Munro has illustrated in this series of cases, as has already been pointed out, that the neurosurgeon specialist is contributing to general surgery data which may be of assistance to the general surgeon, he is not taking cases away; he is educating the general surgeon so that he may adequately and early treat the cases of subdural hemorrhage.

The other thought I have in connection with the paper, and I think Dr Munro has made a very important communication is the fact that Dr Munro stresses the point that for an accurate diagnosis an exploratory trephine opening often may be necessary. That is a very radical statement to make. It is accurate and true and I believe that it illustrates a distinct advance in the surgery of the head, that an exploration of the skull of the cranial cavity should be made under certain conditions for the purpose of making an accurate diagnosis of subdural hematomata. Dr Munro has contributed in this paper to the constructive advancement of surgery bringing to the general surgeon accurate information of an hitherto unrecognized rather common lesion. He has thereby made surgery more efficient. The advance of exploratory trephining under the conditions stated is an important step in the surgery of the head.

DR LYMAN ALLEN, Burlington, Vt. I should like to speak just a moment about a similar case, and first I want to say that I know nothing about subdural hemorrhages except those due to trauma. I think every general surgeon should realize the importance of recognizing the symptoms of traumatic head injuries such as slow pulse, high pressure, and so forth.

The case I wish to speak of is that of a laboring man who was lifting a large rock onto a truck. He slipped and the rock struck him on the nose and forehead knocking him down and stunning him. It broke his nose and bruised his forehead. When he was brought to the hospital his pulse and his pressure were normal and continued so for the next few days. The broken nose was fixed and he was walking around feeling perfectly well and had been transferred upstairs which we do with some

of our convalescents. He was about to go home when, at nine-thirty one night, he suddenly became unconscious, with stertorous breathing. His roommate called the nurse's attention to his breathing. His pressure was 238/130 and pulse 122. Repeated lumbar puncture showed bloody cerebrospinal fluid under increased pressure. He died three days later. We probably should have trephined, but did not. Autopsy showed a contusion of the right anterior frontal lobe with softening of the clot and rupture through into the lateral ventricle. There was no infection whatever.

I want to ask Dr. Munro what we could have done if we had trephined and had found the contused frontal lobe with softening of the clot.

I do feel that in these days of traveling sixty miles an hour around corners, the recognition by the general practitioner (to say nothing of the surgeon) of symptoms suggestive of brain injury is important. Such symptoms should be looked for carefully and repeatedly.

I also believe that a diagnostic trephine is probably safer for the patient in many cases than motor inactivity.

Dr. Munro: Dr. Allen, your case in my opinion, gets right to the crux of the situation. There is no question but that most of the head injury cases particularly these difficult diagnostic problems are going to be left on the doorstep of the general surgeon. The neurosurgeon or the specialist, the neurologist is going to see only those who live long enough to let him get to them; those who can afford to pay for a consultation, and those whose families will recognize and cooperate with the general surgeon in recognizing the value of getting in a specialist whatever that value may be.

On the other hand there are certain responsibilities that necessarily rest on the general surgeon if he is going to take on this work and I think Dr. Allen's question brings up perhaps one of the most important of those responsibilities. This has to do with the equipment in the operating room.

I operate occasionally outside of Boston not by preference but by necessity and I have yet to go into an operating room in a city outside of Boston that has been properly equipped to handle efficiently these acute surgical emergencies that occur as a result of head injuries and the usual most obvious lack of equipment is the lack of some efficient method of suction. That seems like a common or

garden variety of thing to have. The hospitals I happen to have seen have been equipped with the tonsillar suction apparatus where the suction is made by a pump run by an electric motor, and about the time when you reach the end of the first hour and a half and when you really want to use the suction most, all the bearings on the pump and motor freeze and you are left without any suction at all just because you have used it incidentally when you didn't really need it.

I don't believe anybody can handle efficiently such a case as you instance, without suction, on the other hand, with suction you can operate on that type and remove by suction all the soft clot and the contused brain and give these patients a very much better chance of recovery than if you merely open the skull and the dura and leave behind this mass of foreign protein to cause further trouble to the patient's already complicated life.

Dr. Mixer points out that there are cases of subdural hematoma that are non-traumatic. There is no question that that is true. Henschen, whom I mentioned, and who is a Swiss, had quite a list of these cases in his paper. He had combed the literature fairly thoroughly and among other things he mentioned arteriosclerosis and the multiple aneurysms that you spoke of.

I am very much interested to hear of your cases, Dr. Kingman. It is too bad they are not in the literature. Perhaps the Surgeon General and you could get them there, because I think any authentic series of cases of proved subdural hematomata that present a constant history is very well worth while.

My impression from the cases I have seen is that the historical side is a very difficult thing to evaluate and I feel the best that I can do is to say that these cases had a severe injury to the head and perhaps subdural hematoma should be included among the diagnoses.

I am very much struck by the fact that the more one interests oneself in the problem of subdural hemorrhages the more subdural hemorrhages crop up. I and my then associates were practically kicked into this investigation by Dr. Timothy Leary, the Medical Examiner. He was finding subdural hemorrhages we had missed over and over again and it finally got to the point where we were so embarrassed we could not attend his conferences. In self-defense we looked into the matter from the clinical side and as I say, the more we investigated, the more subdural hematomata were found.

THE CLASSIFICATION OF THE CAUSES OF BLINDNESS

International agreement on the classification of the various causes of blindness was sought by delegates from America, Great Britain, and many European countries at the annual meeting in Paris May 14 of the International Association for Prevention of Blindness.

That statistics on the causes of blindness which can be understood by laymen constitute an important factor in the prevention of blindness was pointed out by Professor F. de Lapersonne of the University of Paris, president of the Association.

Dr. Park Lewis of Buffalo, N. Y., vice president of the Association urged that in addition to classifying the causes of blindness, an effort should be made to classify the extent or degree of blindness when vision exists but not in sufficient amount to be of practical use.

More than fifty different etiologic classifications of

blindness are listed in a report submitted by Lewis H. Carris of New York City, managing director of the American National Society for the Prevention of Blindness. "The question of a satisfactory classification of the causes of blindness," said Mr. Carris, "has occupied the attention of the American Committee on Statistics of the Blind for the past three years. The Committee represents the points of view of ophthalmology, public health work for the blind, prevention of blindness and social statistics. It is interested in social and economic as well as medical facts."

Among the major causes of blindness included in the American report are infectious diseases such as diphtheria, measles, opthalmia neonatorum, scarlet fever, syphilis, trachoma and tuberculosis, traumatic and chemical injuries sustained in war, industrial accidents, traffic accidents and surgical procedure and congenital and hereditary causes. *Excerpts from The Bulletin of the National Society for the Prevention of Blindness, Inc.*

ADENOCARCINOMA OF THE STOMACH*

Case Occurring in a Man Twenty-seven Years of Age

BY ROBERT L. PATTERSON, M.D.,† AND ROBERT E. GROSS, M.D.†

HOLMES and Hampton¹ have reviewed evidence to show that chronic ulcerations in the prepyloric area of the stomach usually represent carcinomatous lesions. It was the opinion of these authors that all ulcers at this site should be subjected to surgical exploration because of the frequency with which neoplasm is encountered. The following example of carcinoma of the stomach tends to support this belief. This case also illustrates the difficulty which may arise in differentiating a benign prepyloric ulcer and a cancer in this region. Gastric carcinoma has been occasionally reported below 30 years of age and the following report again emphasizes that the lesion may be found in the third decade of life.

History. The patient was a 27 year old white man who entered the Medical Service of the Peter Bent Brigham Hospital on June 28, 1933 with a chief complaint of three attacks of epigastric pain and vomiting during the previous six months. The onset of this illness began January 1, 1933 following excessive indulgence in alcohol. This first attack lasted one week and was characterized by recurring gnawing pain in the epigastrium and beneath the right costal margin which was relieved by vomiting. The pain had no relationship to eating. During this week he vomited all solid food that was taken, but no fresh or changed blood was noticed in the vomitus. His symptoms completely subsided on a diet of milk and bismuth powders. Gradually he discontinued the bismuth and returned to his regular diet.

He was then symptom free for over three months until he again indulged in alcoholic beverages. Following ingestion of alcohol in April, 1933, the epigastric pain and vomiting returned. Pain and vomiting persisted for several days until he voluntarily returned to a milk diet and bismuth powders. This pain during this attack appeared about an hour after eating and was relieved by vomiting and also by taking baking soda.

He was then in fair health until June 23, 1933. At that time the third major attack began which was similar in nature to those previously described. He was referred to the Hospital because of persistence of symptoms. His stools during the previous six months had occasionally been black. During this half year period he had lost 25 pounds of weight.

The family and past histories were irrelevant.

Physical Examination. The patient was a well developed but poorly nourished young man in little apparent distress. Temperature 98.6°. Pulse 92. Respirations 20. Blood pressure 140 systolic 70 diastolic. Except for evidence of weight loss the examination was negative. There was no abdominal distention, tenderness, mass or spasm.

Laboratory Data. Hemoglobin 95 per cent (S). Red cell count 4,500,000. White cell count 10,700. Urine negative. Blood Wassermann negative. Stools had positive benzidine and guaiac tests for occult blood. Gastric analysis showed free acid equivalent to 60 cc. of 0.1 normal sodium hydroxide and total acid equivalent to 100 cc. 0.1 normal sodium hydroxide.

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Hospital Course on Medical Service. Cholecystograms by the intravenous method showed a well-filled and normally functioning gall bladder. Gastrointestinal x-ray series were taken. Fluoroscopy showed the rugae in the prepyloric area to be thickened with an irregularity of the wall at this site. The stomach was low and hypotonic. The duodenal cap filled fairly well and appeared normal in contour and

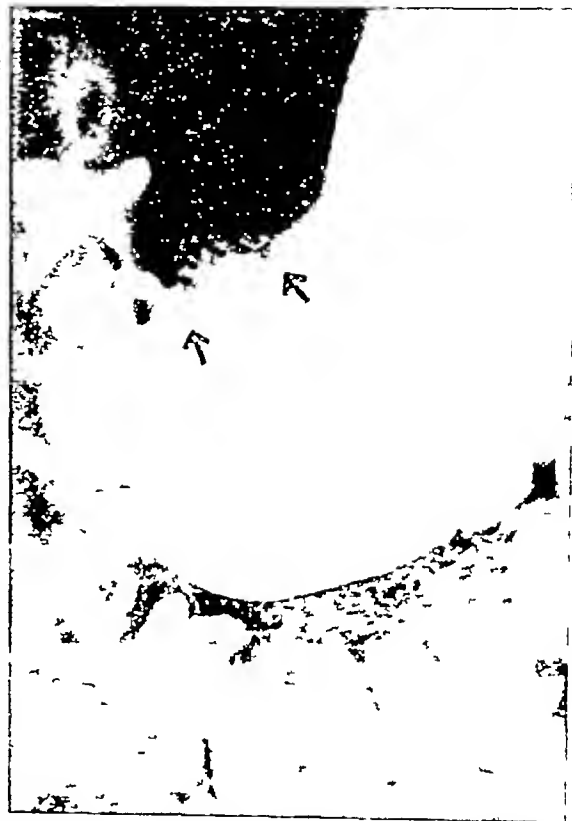


FIG 1. Roentgenograph of stomach. The two arrows indicate the raised margins at the edges of the lesion on the lesser curvature. Between the arrows is the crater of the neoplasm. Fluoroscopy showed that no peristaltic waves passed across this prepyloric area.

position. There was approximately a 5 per cent residue in the stomach after six hours. These studies suggested a prepyloric ulcer.

During the twelve days that the patient remained in the hospital he rapidly became symptom free. For the first seven days a first week Sippy régime was prescribed and for the remaining period, a fourth week Sippy régime was employed. Free acid was well controlled in aspiration material (free acid 0.5, total acid 7.28). He was discharged July 10, 1933.

Subsequent Course. For the following two months there were occasional recurrences of very mild epigastric distress. He was taking a normal diet but used three to five powders per day. He gained 15 pounds in weight. X-ray examination was repeated on September 12, 1933 by Dr. Merrill C. Sosman. This again showed the irregularity in the prepyloric area extending up from the pyloric sphincter about five centimeters along the lesser curvature. At the incisura there was a definite filling defect with a central crater (fig. 1). No peristalsis passed through

this zone. The gastric rugae were enlarged. There was no six hour residue. The duodenal cap was normal. The findings suggested neoplasm rather than ulcer. Exploratory operation was recommended.

Second Hospital Admission. The patient entered on the Surgical Service. Physical examination was negative, except for very slight discomfort produced by deep palpation in the mid epigastrium.

Operation was performed on September 23, 1933, by Dr. Robert Zollinger. The abdomen was explored through a midline upper abdominal incision. A mass about 7.5 cm in diameter was found along the lesser curvature of the stomach, extending up from the pylorus. The stomach was entirely mobile. There

The patient was discharged on October 22, 1933, in excellent condition. When last seen in March, 1934, he was symptom free and in good health.

PATHOLOGIC EXAMINATIONS

Gross Description. The resected portion of the stomach measured 16 cm along the greater curvature and 8 cm along the lesser curvature. Two cm. of duodenum were included with the specimen. The tumor presented on the mucosal surface as a large centrally ulcerated mass 45 mm in length and 35 mm in width (fig. 2). The distal margin of the neoplasm reached just to the pyloric sphincter. The margins of the tumor were raised 8 to 10 mm above the general plane of the gastric mucosa. About one

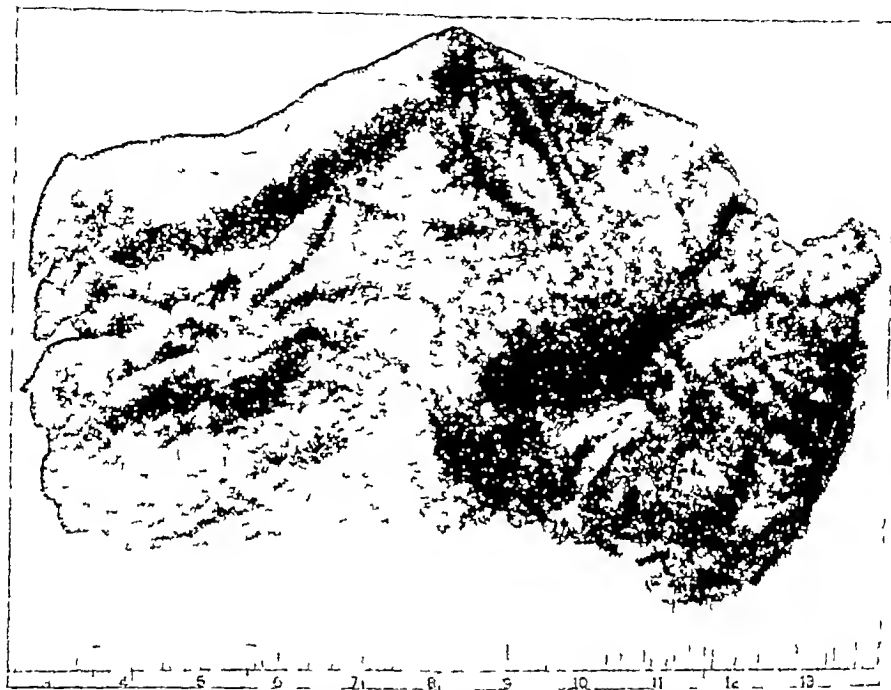


FIG. 2. Photograph of portion of operative specimen. The neoplasm appears with rounded raised edges and a depressed central crater. The pylorus is at the right of the photograph.

were no palpable glands along the lesser curvature or in the gastrohepatic ligament. No nodules were felt in the liver or elsewhere in the abdomen. The gastric mass was resected with a wide margin, removing over half of the stomach and about two centimeters of the duodenum. The remaining stomach and duodenum were joined by a Horsley modification of the Billroth I type of anastomosis.

The patient made an uneventful recovery. Gastric analysis on October 18, 1933, 25 days after operation gave the following results:

	Free Acid (cc 0.1 N NaOH)	Total Acid (cc 0.1 N NaOH)	Gualac Test
Fasting	0	20.5	Neg
20 minutes after test meal	0	12.0	
40	0	7.0	
80	0	2.0	
120	0	10.0	
30 minutes after 1 mg of histamine	3.0	25.0	

half the circumference of this rim was rounded while the remaining half was irregular, jagged, necrotic and hemorrhagic. The crater was 35 mm long and 30 mm wide. It was 12 mm in greatest depth. The deepest portion of the crater projected into the musculature of the stomach wall. The mucosa about the neoplasm was edematous and the musculature was hypertrophied proximal to the tumor. On the exterior of the specimen the serosa was smooth and unbroken. There was no neoplastic invasion of the serosa, the included portion of the gastrohepatic ligament, or the regional lymph nodes.

Microscopic Examination. Sections showed an adenocarcinoma. The tumor replaced the mucosa and submucosa and partially invaded the muscularis. There was no involvement of the outer muscular coats, the serosa, or the regional lymph nodes. Where the tumor was poorly differentiated the cells were large, polyhedral, and varied greatly in size and shape. The nuclei were ovoid, had a fine chromatin material and often contained two or three nucleoli. Most of the tumor was well differentiated and tall columnar cells formed acini and glandular structures of varying size and shape. Mitotic figures were often seen and two or three often could

be found in a high dry field. The stroma was of only moderate amount. There was a moderate inflammatory reaction throughout the tissue. On the surface facing the gastric lumen there was a fibrino-

stomach occurring in a man 27 years of age. The symptoms, clinical course, and relief on ulcer treatment suggested that the lesion was of

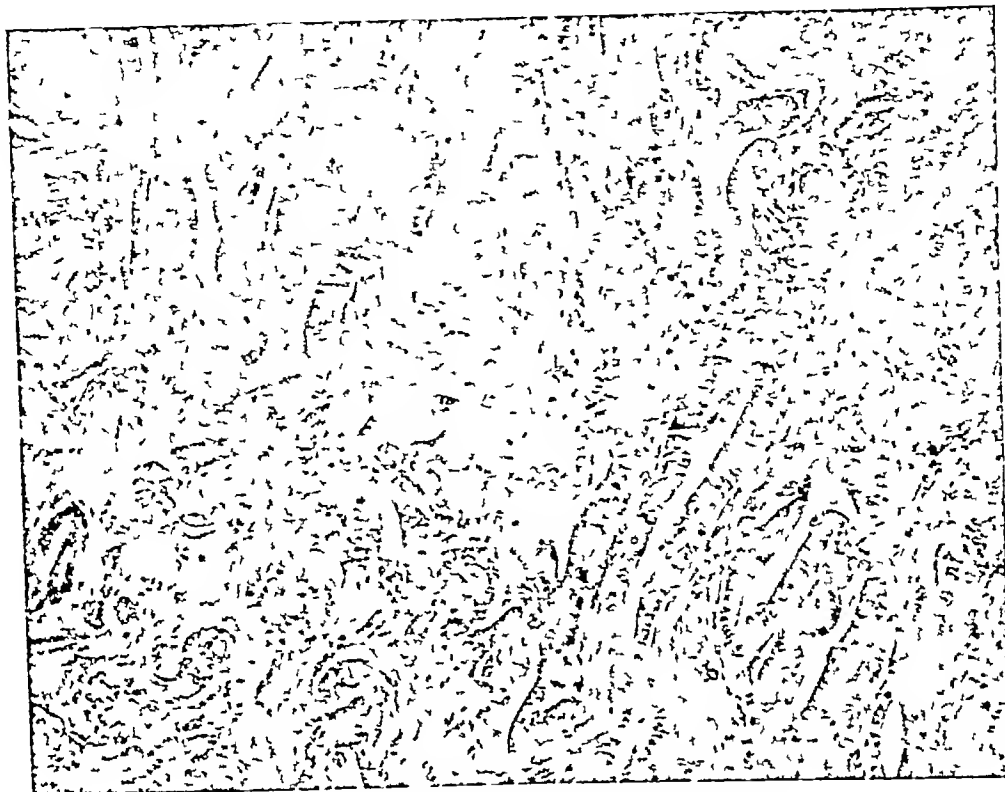


FIG. 3 Photomicrograph of gastric neoplasm $\times 110$. The tumor is here differentiated into acinar and glandular structures.

hemorrhagic exudate. The picture was more suggestive of primary gastric carcinoma than a carcinomatous formation at the site of a previous ulceration.

SUMMARY

Report is made of an adenocarcinoma of the

a benign type, but the location in the prepyloric area aroused suspicion of gastric carcinoma. Resection was performed. The patient is in excellent condition six months after operation.

REFERENCE

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THE METABOLISM OF LEVULOSE*

IV The Hepatic Influence On The Utilization of Galactose and Levulose

BY ALLAN WINTER ROWE, PH D,[†] MARY A. McMANUS, A B,[†] AND ALBERT J. PLUMMER, A M[†]

IN an earlier communication²¹, the authors discussed certain general aspects of the metabolism of levulose as indicated by response to a provocative levulosuria. The present paper deals with the hepatic factor as it influences the

utilization of this sugar, for purposes of contrast and amplification, the galactose tolerance has also been measured for the same group of subjects. There is an historic basis for comparing these two sugars as within the last thirty years each has been warmly advocated as the best approach to a measure of liver function and their several claims equally positively denied. Strauss²⁸ in 1901, influenced by the previous observation of Sachs²² that dehepatized frogs could utilize glucose and galactose but not levulose, developed a test for liver function

Presented at the Forty-Fifth Meeting of the American Physiological Society Cincinnati April 1933.

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based upon provocative levulosuria. Four years later, Bauer² suggested the substitution of galactose as the test sugar, and during the next ten years a fairly extensive literature, reviewed in part in the paper already cited²¹, affirmed and denied the advantages of each sugar as a test for liver function. Yet again, a few years later, the development by Folin⁵ and others of more precise methods for blood sugar analysis practically reopened the question, and again a group of reports appeared championing the one as opposed to the other.

Unfortunately, blood sugar curves lack a clarity of outline and are insusceptible of that quantitative interpretation which is the basic criterion of the value of a function test.¹⁻⁶ Most recently, a group of communications has appeared canvassing the merits of galactose¹⁰⁻¹⁸ and the question has been reopened by Shay and his associates²³⁻²⁵ reverting to the technique originally outlined by Bauer.⁴ Unfortunately when Bauer first described the test, the carbohydrate paradox (Allen¹) had not been recognized, and the author set as the evidence of an exceeded tolerance the arbitrary limit of a galactosuria of 3 grams or more with a test meal of 40 grams. Without adding further to the dialectic in this somewhat controversial field, it may be said that within the wide confines of the 3-gram limit, major fluctuations in tolerance can occur and be merged to an uninformative parity of implied normality. Even in the early days of the test, this lack of definition was recognized and the limiting boundary was lowered to 2 grams¹⁵, to 1 gram²¹, and in a number of instances⁹⁻¹²⁻²² to the positive response to a qualitative test. This latter procedure was further refined by lowering the test meal to 30 grams²⁰⁻³⁰ and even to 20 grams.⁷

The earlier work, in part at least through a failure to recognize the disturbing influence of the carbohydrate paradox, also ignored the sex difference later described by one of us.¹⁷⁻¹⁸ This has recently been denied by Harding and Moberley⁸ on the basis of an essentially different technique. Their results are qualitatively in accord with those of the senior author; they prefer to ascribe the different response of the sexes to a difference in the degree of diuresis which the sugar excites, this would seem to be equally a phenomenon governed by the sex of the subject.

During the past ten years, the senior author and his associates have been studying the metabolism of galactose from a variety of standpoints and a series of reports has appeared in the literature.¹⁷ One of the more recent¹⁷⁻¹⁸ has dealt specifically with the hepatic element as a factor of influence in the metabolism of this sugar. In general, hepatic dysfunction exercises a depressing influence on the utilization capacity of the individual, a certain number, however with-

out significant complication, showed normal or even increased power to utilize this sugar.

The present study reports the results from a somewhat smaller but equally representative group whose tolerance for both sugars was determined during the course of an elaborate diagnostic study. The technique of administration, the analytical procedures and the needful precautions have already been discussed in the preceding paper.²¹ The subjects utilized for the study are recorded in the first table. All of the patients had a demonstrated hepatic dysfunction of some type, in addition, one half had some complication usually influencing sugar tolerance.

TABLE I
PRIMARY ETIOLOGY

Group	Number
I Hepatic Dysfunction, uncomplicated	35
II Toxic Pregnancy	22
III Thyroid Failure	11
IV Miscellaneous	
Pituitary (dysfunction)	3
Ovary (hypofunction)	3
Abortion	1
Cancer (liver)	2
Syphilis	2
Psychosis (alcohol)	1
	— 12
Total	80

Group I was composed of individuals with demonstrated hepatic dysfunction of varying causes and types. Group II was composed of pregnant women with toxemia, all demonstrating an hepatic factor.¹⁰ Group III was composed of patients with thyroid failure complicated by hepatic disorders, an association of relative frequency.²⁰ Group IV is a miscellaneous group, half of whom show an endocrinopathy while the other half present other types of morbidity all complicating or associated with a primary hepatic status. These latter were selected as the complications which they present are known to influence the galactose tolerance. The basic data of sex and age are grouped in table II.

TABLE II
SEX AND AGE

Group	I	II	III	IV	Total
Sex					
Male	10	0	2	5	17
Female	25	22	9	7	63
Age					
High (yrs)	71	44	51	60	71
Low (yrs)	13	20	14	12	12
Average (yrs)	40	32	37	32	36

Irrespective of the overweighting deriving from the group with toxic pregnancy, there is

a very definite preponderance of females. The age range shows a wide scatter, that of the pregnant women alone exhibiting the narrower boundaries intrinsic in their physiological status. The group averages show a reasonable parity.

Certain other data deriving from history or examination bear more directly on the common factor of the series, i.e., the hepatic element. Nearly 10 per cent of the series had had earlier gall-bladder disease leading to surgical intervention, while double that number at the time of study gave clear-cut evidence of gall-bladder pathology on radiographic examination. In like manner, past or present appendicitis was a common datum and other pathology of the gastrointestinal tract was reported with significant frequency. Hepatic enlargement was demonstrated in six of the group. Table III presents a convenient summary of these several pertinent features on the basis of relative frequency.

TABLE III
SUMMARY

Datum	%
Gall Bladder	28
Appendix	39
Abdominal and Pelvic Pathology	34
Hepatic Enlargement	8

The several factors susceptible of quantitative expression associated with the carbohydrate exchange fall broadly into three categories, namely, blood, urine, and respiratory exchange. In the first, blood sugar curves, as already noted above, fail to offer a reliable quantitative approach, and with levulose the changes in level produced by even massive test meals are very small. Control blood sugar levels are pertinent, however, as hyperglycemia may produce abnormal urine findings. In the second group glycosuria as such indicates a disturbance of the sugar metabolism although the factors capable of producing it are protean in their array. The tolerance test, as applied in this study rests upon evidences in the urine of an exceeded assimilation limit.

The third group of evidences, i.e., the respiratory exchange, has not been undertaken in these studies. Carpenter and his colleagues⁴ have shown definite and positive results with both the sugars and in the case of galactose⁴ have recorded an interesting difference in the response of the two sexes.

TABLE IV
BLOOD AND URINE RECORD

Datum	Group				Total
	I	II	III	IV	
Glycosuria	29%	23%	9%	25%	24%
Blood Sugar					
High (mg)	123	102	105	113	123
Low (mg)	69	70	85	65	65
Average (mg)	94	86	95	96	92

The influence of thyroid failure in raising sugar tolerance is suggested by the less frequent occurrence of glycosuria in this group (III). The low blood sugar average of Group II reflects the downward trend known to be associated with pregnancy. The hypoglycemic levels of the low records in Groups I, II, and IV may be interpreted in terms of the liver influence, the complementary high figures may be traceable to the emotional reaction to venipuncture, always a source of potential error. As it is, no significant hyperglycemic levels are recorded and the averages fall well within the strict range of the normal.

One special approach to the estimation of the levels of hepatic activity is found in the measurement of bile production following the technique of McClure and his associates¹¹. A few of the patients were unable to take the duodenal tube and so the record for this evidence falls a little short (14%) of completeness.

TABLE V
LIVER FUNCTION (McCLURE)

Datum	Group				Total
	I	II	III	IV	
Number examined	29	20	10	10	69
Color					
Brown (%)	14	5	40	0	13
Yellow brown (%)	4	10	10	30	10
Green (%)	10	5	0	10	7
Yellow (%)	72	80	50	60	70
% Below normal					
Furfural Index	86	80	70	100	84
Cholesterol	59	45	30	60	51
Pigment I	79	85	80	90	83
Pigment II	90	90	70	90	87

Of the four constituents measured, cholesterol is the least influenced by abnormal bile production. Further, low values are less frequently recorded in Group II where high blood cholesterol constitutes a characteristic feature of the basic condition¹², and in Group III where a similar condition may be regarded as possible¹³. So far as the biliary function of the liver is concerned, these figures leave no doubt as to significant hepatic abnormality in the members of this series. Other evidences, omitted in the interest of space conservation, are wholly supporting.

Turning now to the primary matter of this communication, the response of the series to galactose will first be considered. For purposes of orientation, it may be stated that the normal male tolerance level is 30 grams, while the response of the female is broadly influenced by her sexual status and ranges from 20 grams in the prepuberal years through 40 during the adult period of sexual activity to a slight decline (two thirds drop to 30 grams) after the climacteric. Pregnancy and menstruation lower tolerance while castration or severe

functional failure of the ovaries restore the tolerance level to 20 grams. Thus departures with the female can be mutually correlated only by expression in terms of percentage deviations, while the male does not show this fluctuation, for the sake of uniformity, relative values have been adopted throughout. The results of the galactose testing are collected in table VI.

TABLE VI
GALACTOSE TOLERANCE

Datum	Group				Total
	I	II*	III	IV	
Above normal (%)	0	5	0	8	3
Average amount	—	+100%	—	+33%	—
Normal (%)	6	80	36	17	31
Below normal (%)	94	15	64	75	67
±0 to -33%	23%	0	36%	8%	17%
-34% to -67%	43%	15%	18%	42%	32%
More than -67%	28%	0	9%	25%	18%

*Two cases not tested

While it is generally conceded that disturbed hepatic function has a depressing influence on the galactose tolerance, there is a complete lack of agreement as to the types of liver disorder influencing the test. Many of the reports fail to allow for the carbohydrate paradox, and thus individuals showing a marked depression are designated as normal because their galactosuria falls below an arbitrary value which could be produced in the normal individual only by massive supertolerance doses. In a recent paper by Roe and Schwartzman¹⁰ in which they report the administration of galactose on the basis of one gram per kilogram of body weight, the doses range from 44 to 75 Gm (average for 10 subjects, 63 Gm), and the amount recovered in the urine from 0.91 to 2.78 Gm, with an average of 1.67 Gm. Thus with relatively large supertolerance doses not one of the group surpasses the inexacting standard originally suggested by Bauer.²

While the tendency is usually downward¹¹⁻¹³, some uncomplicated liver cases show a normal and a few exhibit a definitely increased tolerance. Making allowance for all possible superimposed factors influencing tolerance and for potential errors, there yet remained six cases (4 per cent) with normal and seven (5 per cent) with increased tolerance. In the present smaller series of Group I, none of the patients studied showed an increased tolerance, 6 per cent were normal, and the remainder exhibited varying degrees of depression. Pregnancy lowers the galactose tolerance and in the later stages the prepuberal level of 20 grams is uniformly encountered in the normal.¹⁴ In this group, all of the members of which had definite evidence of hepatic abnormality, four-fifths of the entire series were normal, one case showed an augmented tolerance, and only the inconsiderable

remainder (15 per cent) gave evidence of a depressing hepatic influence. In Group III the augmenting influence of thyroid failure works in opposition to the usual depression of the liver dysfunction. The result is to give normal tolerances in one-third of the group. Finally, in the miscellaneous group (IV) one case with a bilobar pituitary failure, a condition which exerts the most powerful of known augmenting influences, overbalances the hepatic depression and shows the modest increase of 33 per cent above prediction. Further, two cases are normal and the remainder are all depressed. In other words, of the eighty cases represented, over half of whom present superimposed complications which ordinarily affect the galactose tolerance, 3 per cent are above normal, 31 per cent normal, and the remainder, two thirds of the entire group, exhibit the depression which is the usual response. The distribution is to be regarded as typical, certain implications will be discussed later in the text.

All of the patients in this series were also tested with levulose, using a sugar of the highest purity, a precaution of fundamental importance in tolerance testing with all sugars. Standards for normal levels with this latter sugar at present lack clear-cut definition, as the total levulose series is but a few hundred in number, and this includes both the normal and abnormal. The very high cost of the sugar, the larger amounts used in testing, the time factor for the complete diagnostic survey, and yet other inhibiting influences have prevented that completeness which is the ultimate goal. Enough work has been done, however, to warrant the establishment of approximate values for normal standards.

TABLE VII
NORMAL LEVULOSE TOLERANCE
(Values are approximate)

Condition	Positive Test Meal
Male adult	100 Gm
Female, adult	100-125 Gm
Female pregnant	50-100 Gm

While the values are at best approximate, several features are suggestive. First, there does not seem to be evidence of a clear-cut sex difference with this sugar, it is not precluded and a longer series may reverse the present impression. Secondly, while pregnancy produces a lowering in tolerance, it does not manifest itself so early and the decline is slower, the final relative level, however, compares favorably with that shown by galactose. Since the normal standards cannot be straitly delimited, it has seemed best to report the results of levulose testing initially in terms of the actual sugar dose which first produced a demonstrable levulosuria. Taking the tentative standards of 100-125

Gm to embrace both the normal male and female, Group I, the only sub series without extraneous sugar influencing factors, it is evident that 9 per cent are above and 71 per cent below the normal zone. The figures do not compare well with those from the galactose test where 94 per cent were depressed and but 6 per cent normal. Group II, with an even larger zone defining the normal, practically duplicates the distribution in the galactose test. Even if the 100-gram response were interpreted as an increased tolerance, 68 per cent of the series would still fall in the normal zone. In Group III with

Three of the four groups (I, II & IV) show an almost identical division with two cases in agreement for each failing in concordance. The sole exception, Group III, shows the same partition but in the opposite sense. This would seem to confirm the tentative opinion that the endocrine (thyroid) influence is not the same on the metabolism of the two sugars, qualitatively, at least, disturbed liver function seems to have a depressing effect on both sugars but in a slightly more pronounced degree with the galactose (65 per cent against 58 per cent).

DISCUSSION

A brief review of the findings of others may suitably preface the discussion of these results. Nine authors report a total of 525 normal individuals who have been given 100 Gm of levulose by the oral route, seventy-one, or 14 per cent, were reported positive to this dosage. Many of the subjects were the so-called "hospital normal," and further, as has already been noted in the text, the criteria for positive response are almost as numerous as the investigators. Strauss²⁸ the original proponent of the test used a qualitative demonstration of melituria, Frey⁷ regarded anything less than 0.1 Gm as normal, i.e., negative, while Wörner and Reiss²² adopted the more liberal limit of 0.7 Gm in the urine to define the normal. Our own results would make it seem probable that on the basis of the Strauss criterion the number receiving a positive report would be definitely augmented.

Nine articles in the literature report a total of 217 pregnant women of whom 180, or 83 per cent, were positive with an oral test meal of 100 grams. Within the limitations noted above for the "normals", these figures would seem to be in general accord with our own results.

Turning to the reports on liver function, seventeen papers report 954 cases, of whom 649, or 68 per cent, were positive to 100 grams of levulose. Superficially there would seem to be a rough agreement with our own figure of 58 per cent, closer analysis develops a definite lack of concordance. With many of the reports based upon a more exacting standard of positive response than our own qualitative index, there are none the less 10 per cent more cases with a positive test than in our own small series. This figure would undoubtedly be still higher if all reports were reduced to the common denominator of the qualitative approach.

Two investigators report a total of 51 cases with 38 positive (or 75 per cent) when the dose was but 50 grams. Omitting the toxic pregnancy group where a superimposed physiological factor is patently operative, 17 in 58, or but 29 per cent, of our cases give a positive response.

The answer for these discrepancies is not far to seek. In a careful review of much of the lit-

TABLE VIII
LEVULOSE TOLERANCE

Positive Test Meal	I	Group II	III	IV	Total
Over 150 (%)	3	—	18	—	4
150 (%)	6	—	—	—	3
125 (%)	*6	5	*9	*8	6
100 (%)	14	*9	9	8	11
75 (%)	43	27	46	42	39
50 (%)	20	41	9	25	25
25 (%)	8	18	9	17	12

*Probable normal zone in box.

the augmenting thyroid influence, 18 per cent show high levels and 18 per cent normal, together they balance the 36 per cent who were normal with galactose. In the final sub-group (IV), there are no cases to parallel the report of increase with galactose, the normal fraction is the same and the depression is more frequent with the levulose than with its fellow.

Broadly speaking, there is a rough general parallelism in the indications with the two sugars, the levulose seems possibly less susceptible to the influences of superimposed endocrine states. But this type of statistical approach does not necessarily indicate the concordance or its lack with the individual components of the series. Warring any attempt at a nice quantitative reading and expressing each test as normal, increased, or diminished, the data can be subjected to a final analytical approach.

TABLE IX
CORRELATION OF SUGAR TESTS

Datum	I	Group II	III	IV	Total
Number	35	20	11	12	78
Agree (%)	69	65	36	67	63
Differ (%)	31	35	64	33	37

erature supplemented by a small group of personal observations, Freund⁶ has weighed the relative authority of the two sugars as indices of disturbed liver function. He finds no parallelism in his own results in the relative indications of the blood and the urine with levulose as the test meal. On the basis of all of the evidences, he concludes that levulose yields the more reliable indications when there is significant parenchymatous involvement, while galactose is the more dependable in cirrhotic conditions. Other states, such as jaundice from mechanical causes, syphilitic involvement of the liver and the like, yield results which are entirely indeterminate. In other words, the cases recorded in the literature, on which the quoted statistics are based, presented severe liver dysfunction, the majority of them with jaundice, and were not equatable with the greater portion of the patients in our own series with whom the liver derangement was functional in character and in larger measure unassociated with jaundice at the time of study. The differences recorded are of degree and not of kind, reflecting the severity of liver impairment. We feel that the approach through a series of graded test meals with the definition of that dose for each individual which will produce a transitory melituria, sharpens the significance of the test as an index of functional hepatic derangement. From the literature one would deduce that the differential diagnostic value of both sugars is most in evidence with the patients presenting obvious signs of severe hepatic involvement with jaundice, and even here the weighting rests on a relative and statistical basis. Failure to give due recognition to other factors certainly influencing carbohydrate metabolism is undoubtedly an element in the contradictory reports which comprise the clinical literature on this subject. The lack of uniformity in the conventions of the test and the criteria of positive response have already received comment.

In the series of studies of which this report is but one, we are endeavoring to ascertain, by a standardized technique and uniform approach, both the identity and character of the factors influencing the metabolism of this sugar and if possible, to give them quantitative significance. The work must be confined to man—the contradictory findings of Sachs²² and of Bauer² are but one illustration of the many forming the basis of this decision. That the mechanism of utilization of galactose and of levulose is not identical, seems to us a warrantable deduction from this and the other studies recorded in the literature. The use of adjuvants such as brandy³ or beef extract¹⁴ to sensitize and sharpen the test, has but little to recommend it, the problem is sufficiently complex without the addition of further extraneous factors. Such procedures and those in which more than one sugar is used may enhance the differential meaning of the

test but certainly do not clarify the underlying mechanisms of utilization. In the present study the only warrantable inference is that hepatic dysfunction tends to influence the utilization power for both sugars with qualitative agreement in two-thirds of the patients studied and with an equal lack of concordance in the remainder. Further, with both sugars a few subjects show an enhanced tolerance where the agencies usually producing this result are not demonstrably operative. Finally, galactose seems to be a slightly more sensitive index than levulose in this series of liver cases, the difference is, however, inconsiderable.

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PATHOLOGICAL DISLOCATIONS OF THE SHOULDER BACKWARD AND ROTATION DEFORMITY

BY FREDERIC JAY COTTON, M.D.,* AND GORDON, MACKAY MORRISON, M.D.*

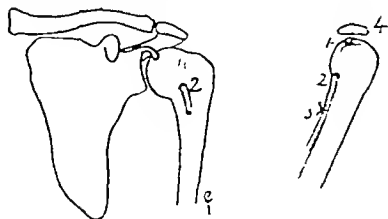
IN the main these are results of obstetrical paralysis, complicated often with residual muscle pareses, and with the queer bony overgrowths of which the down-hooked overgrown olecranon is the familiar type

One has learned to free the hindrance of tight pectorals, and J. W. Sever has very well taught us about clearance of the distorted overhang of the acromion

In occasional cases, however we are confronted with a persistent back-slip of the head, and in not a few with an inward rotation of the humerus and of the whole arm not anatomic but physiologic, conditioned probably on long shortened tissues and loose posterior capsule

For cases of each of these classes we have to-day a remedy worth noting

As to the backward luxation Nicola has



The Nicola operation

- 1 Biceps tendon (of long head)
- 2 Biceps tendon emerging from the artificial tunnel into the bicipital groove
- 3 Cut ends of biceps tendon sutured
- 4 Acromion

shown us the way, and I think Roberts' modification of his operation is serviceable. Both, and either, are efficient. Here there is no question of absolute anatomic repair. Nicola's operation is not a "restitutio ad integrum", nor need it be. What we want is an efficient mooring, better than the slinging to the acromion with fascia or tendon. The Nicola operation gives this absolutely. The biceps tendon run-

ning in its new course from the glenoid edge through the edge of the head to a fixed point in the bicipital groove gives an absolute and permanent fixation against backward displacement

In the other cases, which are rare, in which some congenital defect of muscle balance gives forward luxation or subluxation of the head, we gain by this operation a real and effective mooring

In the other class, those cases of obstetrical paralysis in which nearly complete muscle regeneration has been achieved, but in which the elbow comes up first with the hand lagging, there is an operation not new, but not familiar enough, that works

Disregarding all questions of anatomy, for it is *physiology* that concerns us, we may achieve correction by an osteotomy of the shaft just at or below the pectoral insertion an osteotomy with rotation outward of the arm, below the cut through something like 60°

Temporary fixation with a plate is desirable—otherwise contact of rotated fragments is hard to hold. The results are a bit amazing

Brief data of four cases follow. R. M., female, aged 27, nurse. Congenital shoulder. Seen September 15, 1931. Left arm showed a clean-cut picture of a brachial palsy of the Erb type. No actual paralyses remained, but she was much handicapped. On raising the arm forward it came up elbow first (internal rotation) and there was a very obvious posterior movement of the head of the humerus back to the back edge of the acromion (posterior subluxation). Motion was limited to a point below the horizontal plane.

On the arm being dropped the displacement reduced itself; there was some inward rotation due to a tight pectoral and the acromion was prominent, seemingly hook-shaped.

Shiagraphs showed a heavy hooked prominence downward of the end of the acromion, nothing else save general slight lack of bone growth.

Operation proposed and done. Anterior incision as usual. Acromion chiselled across, turned up. Part of pectoral insertion above was divided. A

typical Nicola operation was done, the divided biceps tendon pulled back up into the joint, brought down again through a tunnel and carried through the front part of the head to the floor of the bicipital groove. The cut ends of the biceps were then firmly sutured together.

Normal recovery was followed by greatly improved (not normal) range of motion forward, outward, and in outward rotation, and was very gratifying. After about 18 months there was an unfortunate recurrence of overgrowth of bone at the front of the acromion, which will need attention. There is and has been no trace of recurrence of the backward displacement.

E. O., female, aged 21, seen April 29, 1933, in consultation with Drs. Russell Sullivan and John Kerrigan. Chronic dislocation of both shoulders anteriorly. This shows a subcoracoid luxation on both sides. The history is curious and not clear. A healthy active girl, rather overplump, always had something queer about the shape of her shoulders but was never concerned about the lack of motion or use. About a month ago, as a result of an electric shock, the right shoulder was dislocated. It was reduced by Doctor Kerrigan. Shortly after, something happened to the left. I rather question the accuracy of her observation. At all events both shoulders were out and irreducible, showing in the x-ray small bones and some thinning of texture. Both heads were subcoracoid, the right more displaced than the left.

Operation on the right side, at Choate Hospital with Dr. Russell Sullivan, May 5, 1933. Hueter incision. Half of pectoral insertion divided. Incision up the biceps groove and in front of the capsule. The tendon was cut, and the proximal portion pulled into the joint. The soft parts were stripped from the edges of the small glenoid, but not easily. The dislocation was reduced and motion assured by stretching. A tunnel from the biceps groove through a point on the front edge of the articular surface of the head was made through which the biceps tendon end was passed from above downward, and both proximal and distal ends solidly sutured together, and to the edges of the bicipital groove. In suturing the capsule, the subscapularis, which was apparently normal, was advanced half an inch.

Second operation. The left shoulder was operated on at the Choate Hospital with Dr. Sullivan, June 20, 1933. The usual anterior incision the

head was forward but not so far out as the other had been. The same difficulty in tearing loose of evidently very old adhesions—from the edges of the small glenoid (particularly behind) in order to make reduction possible, was encountered. Then a typical Burrell-Cotton operation was done.

September 27, 1933. The left shoulder shows nearly normal range of motion. The right still shows limitation of near a half in abduction and external rotation. This was more of an operation than was needed on the right. Both are perfectly useful; neither has shown the least displacement of the head.

C. B., female, aged 30, seen June 13, 1931. Since earliest recollection she has had a partly crippled right arm and has had muscle training. This was an obvious obstetrical paralysis, with good return of muscles but with sharp internal rotation of the arm. For example, she cannot use the hand in eating. As always it is hard in this case to evaluate muscle imbalance, muscle spasm and possible skeletal change. The skiagraph showed marked lack of bony development of both glenoid and humeral head. Nothing else. Disregarding all this osteotomy was advised and done June 22, 1931, at the Faulkner Hospital (Cotton and Morrison). Anterior incision, osteotomy at the pectoral insertion and a four-screw bone plate was used. During convalescence an accidental trauma gave a lifting out of the bone screws from the upper fragment with a bit of outward bowing and excessive callus. The plate was removed August 22, 1931. Despite mischance, the end result is excellent with restored outward rotation and forward lifting motion.

M. McC., female. Age when first seen 13 years. (Boston City Hospital). This was an obstetrical paralysis in a particularly vigorous little girl in whom judicious exercise had brought back practically normal muscle action. There was unfortunately, about 50 degrees of internal rotation apparently not all from muscle contracture or contraction. At all events a cross section of the humerus was made through the insertion of the pectoralis major and the arm rotated out and held in traction in a Murray Jones splint. On July 22, 1932, eight years later, opportunity came to reexamine her. She had fortunately been a swimmer and had limbered and developed the shoulder wonderfully. To-day she shows full free motion, nothing objective save a negligible scar.

MEDICAL PROGRESS

ADVANCES IN PEDIATRICS*

BY R. CANNON ELEY, M.D.†

INFLUENZAL MENINGITIS

THIS type of meningitis is looked upon with a great deal of apprehension, as extremely few cases recover. Rivers¹ in a review of 220 cases in 1922 found a mortality rate of 92 per cent and subsequent reviews with the inclusion of additional cases have shown only fractional changes in this figure. Bloom² in a very extensive review of the literature both in this

country and abroad was able to collect twenty-four cases with recovery out of 302 cases. Jenks and Radbill³ recently reported thirty-two cases treated at the Children's Hospital at Philadelphia over a period from 1921 to 1929 inclusive with no recoveries. Gibbens⁴ in 1931 reported two cases with one recovery.

Ward, Fothergill and Wright^{5, 6, 7, 8, 9} in a series of recent papers have made an intensive study of influenzal meningitis from the point of view of producing a therapeutic antiserum, and the study of the mechanism of the action of such a serum. They confirmed the work of early

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investigators showing the relative homogeneity of influenza bacilli. In addition they have shown that virulent meningeal strains are "smooth" in colony form and produce a specific soluble substance. These latter observations were also made by Pittman¹⁰

The above authors have also observed that the presence of agglutinins in the antiserum did not necessarily connote bactericidal activity. Precipitins in the antiserum, however, accurately parallel the bactericidins. In other words, in order to destroy the meningeal strains of influenza bacilli an antiserum must be capable of precipitating the specific soluble substance of virulent strains. The authors succeeded in producing such a serum in horses by prolonged immunization with formalinized virulent influenza bacilli.

In addition they have pointed out that complement is necessary for the bactericidal action of a serum possessing the above-mentioned properties. Complement is practically always absent in the spinal fluid of patients with influenza meningitis. Their treatment consists in the administration of antiserum plus fresh normal human serum as complement.

Therapeutic results so far have been encouraging. However there appears to be early "walling off" in this disease and in many cases, even though it was possible to sterilize the spinal fluid, yet the patients would eventually die from localized lesions. In a personal communication from one of the authors (Fothergill) it has been learned that they have had ten complete cures to date. Because of early "walling off" it is needless to emphasize the necessity for early diagnosis.

These investigators have pointed out also certain important statistical data regarding the disease. It is primarily a disease of infancy, about 80 per cent of the cases occurring during the first two years of life. Furthermore, the disease is much more common than is generally supposed, for in their review of meningitis in the Infants' Hospital of Boston they found it the third most common type during the first two years of life. Tuberculous meningitis is the most frequent type with meningococcus meningitis second.

Recently Fothergill and Wright⁹ have studied the possible reasons for the striking age incidence of influenza meningitis, and have found the incidence to be accurately correlated with the bactericidal activity of whole blood from individuals of various age groups. Cord blood and blood during the first six weeks of life possess considerable bactericidal activity for virulent strains. This probably represents a passively acquired humoral antibody transferred from the mother through the placenta and is gradually lost during the first two months

of life. It is interesting that the disease practically never occurs during the first two months of life. From two months to three years, the blood has practically no bactericidal activity and it is during this period that the majority of cases occur. From three years on, the killing power gradually rises. This killing power is probably due to an actively acquired immunity represented by a humoral antibody. This antibody, or its absence, is presumably important during the bacteremic stage of the disease.

TUBERCULOUS MENINGITIS

In 1932 Bokay¹¹ reported successful results in the treatment of five of seventeen cases of tuberculous meningitis (the diagnosis was established by both clinical and bacteriologic examinations) by energetic deep roentgen therapy. The author divided the cases into two classes, an exudative diffuse, and incurable group, and a local meningeal tuberculosis, it is this latter group that has responded to treatment. Wiener¹², encouraged by the report of Bokay, treated nine cases with roentgen therapy but was unable to obtain any improvement. In fact, it was his impression that the treatment hastened the death of the patients. However, some consideration must be given the fact that Wiener's cases were advanced while Bokay's were treated early in the course of their disease. Gordon¹³ treated three cases by this method with the following results: "Two of them, according to the concepts presented, offered no favorable response to this method, in that the tuberculous infection of the meninges was only an accompanying part of a generalized miliary dissemination of the disease throughout the body. The third patient was judged favorable for this form of treatment in that the infection of the meninges was the outstanding manifestation. All three patients died, the first two rather promptly. The third one, the child being favorable for treatment, showed a well-marked clinical response early in treatment, with decreased fever, improvement of physical signs, and most important, improvement of the sensorium and general clinical appearance. A relapse occurred after six days with death on the eighth day." The extremely high mortality rate of this disease certainly justifies any therapeutic procedure which, in itself, is free from danger to the patient. Obviously further clinical investigation is not only warranted but indicated.

POLIOMYELITIS

In view of both the favorable and unfavorable discussion concerning the efficacy of convalescent serum in the treatment of acute paralytic poliomyelitis, a brief review of this phase of the subject seems pertinent at this time of

the year "The initial symptoms are much the same in all types of the disease and they may be quite as severe in the nonparalytic as in the paralytic." This statement by Neal¹⁴ shows very clearly how difficult it is to determine the efficacy of any form of therapy instituted during the preparalytic period of acute poliomyelitis. Furthermore, it is impossible to evaluate properly the results of a given form of treatment unless the results can be compared with properly selected and supervised cases that did not receive treatment. The great difficulty in determining the value of convalescent serum (technic of obtaining and preparing serum¹⁵) has been the lack of control cases.

Soon after the introduction of this procedure in the treatment of acute preparalytic poliomyelitis, the literature contained favorable reports¹⁶ and one received the impression that convalescent serum was of definite value. However, the only controls were those cases diagnosed after paralysis had appeared and these patients, in many instances, were not seen prior to that time. Obviously, herein lay an actual error in drawing conclusions, for the number of patients who recovered *without* paralysis and who were never seen, could not be included. In fact, the only conclusion that actually could be drawn from these early observations was that *if the serum is of value, it should be given early*¹⁷ and before paralysis has developed. This same criticism, i. e., inadequate control groups, may be applied to the observations of recent authors^{18, 19, 20, 21, 22, 23} who advocate the administration of convalescent serum. Andrews²⁴ has presented evidence to show that when a virus of the filtrable class has made its biologic union with the tissue cells it is no longer within reach of a neutralizing virus. This observation offers a possible explanation for the failure of the serum to be of value as a therapeutic agent.

Torian and Winters²⁵ are of the impression that convalescent serum is of little value in influencing the course of the disease, yet they treated only four cases during the preparalytic stage. Definite conclusions cannot be reached from such a small number of cases. In an extensive series of 927 preparalytic cases, 519 of which were treated with convalescent serum while the remaining 408 were not given serum, Park²⁶ found that paralysis developed in 19.6 per cent of the treated cases, in only 1.1 per cent of the untreated cases, and that the mortality rate among the former group was 3.8 per cent as compared with 0.9 per cent among the latter group. The recent observations of Kramer, Aycock, Solomon and Thenebe²⁷ in a carefully controlled series of treated and untreated cases also fail to give any statistical evidence of its value as a therapeutic agent.

In her conclusion on the treatment of poliomyelitis by convalescent serum Neal²⁸ states "A group of more than 1000 cases, including

those of Kramer and Aycock, diagnosed in the preparalytic stage, with approximately half treated by convalescent serum, shows nothing to indicate the therapeutic value of the serum, either in reducing case fatality or in preventing paralysis. Indeed, the slight difference between the treated and untreated groups is against the use of serum. Since the same results were shown by three groups of workers, the physicians of the Health Department and Hospitals, the physicians working under the direction of the subcommittee on Poliomyelitis of the Public Health Relations Committee of the New York Academy of Medicine, and Kramer and Aycock and their associates—it may be concluded that these cases were diagnosed and treated without personal bias. It is fair to say, however, that there is a belief that the percentage of moderately severe cases was a little greater in the treated children in the group studied under the direction of the Academy of Medicine." At the present time, further observations among carefully controlled cases would seem to be indicated before definite conclusions as to the specificity of action in preventing paralysis in this disease can be drawn.

Convalescent serum has been administered intrathecally, intravenously, and intramuscularly, either alone or in combination with one or more of the other methods. The intrathecal injection of the serum, though advocated by some, does not appear advisable, for it is invariably followed by an exaggeration of the clinical manifestations of meningeal irritation. Furthermore, it is a well-recognized fact that the presence of serum of any nature within the cerebrospinal fluid establishes a sterile meningitis and thereby possibly increases the already existing reaction. The intravenous route is preferable, for in this manner large amounts of the serum may be readily administered and rapidly distributed throughout the body. If convalescent serum cannot be obtained and it seems advantageous to administer this form of treatment, a blood transfusion may be employed. Certain authors²⁹ have advocated this procedure over serotherapy, as a donor can usually be obtained without delay and larger amounts can be given.

The administration of convalescent serum, or whole blood, as a widespread prophylactic procedure has been advocated, but at the present time the scientific evidence is insufficient to warrant its acceptance as a universal measure. In view of the fact that the majority of adults have acquired an immunity^{30, 31} to the disease whereas young children have not, it may be advisable to administer serum intramuscularly or intravenously to this group when a member of the family has developed the disease. This passive immunity, however, is only temporary, lasting from five to seven weeks, and should the person be reexposed after this period, a second injection of serum would have to be given. If such prophylactic measures were employed,

many children would unnecessarily be subjected to treatment simply because a case, or suspected case, occurred in their neighborhood

NARCOLEPSY

In view of the increasing number of case reports in the literature and inasmuch as successful symptomatic treatment has recently been described by several writers, a brief review of this condition is of interest

Narcolepsy, first described by Gelineau²² in 1880, may be said to be characterized by two chief symptoms i.e., an irresistible desire to sleep, and a feeling of generalized weakness following laughing or other emotional disturbance. The desire to sleep may occur at any time, regardless of the attending circumstances and is unrelated to the amount of nocturnal rest, the patient may suddenly go to sleep while reading, eating, talking walking or working. This sleep resembles the "normal" sleep of an individual, although it may at times be accompanied by hallucinatory dreams which in themselves may cause the patient to awaken. As has been pointed out by Adie²³ there are occasions, however, when the weakness or cataplexy may result in closure of the eyes and inability to articulate, thereby giving the impression of sleep. The attacks of generalized weakness, or the cataplectic attacks, are precipitated by emotional disturbances, the most common of which is laughter. In fact many of these patients refuse to laugh, knowing well that any such act will be immediately followed by a generalized sensation of weakness which may result in their collapse, less frequently fear, anger, or distress may produce this same sensation.

The etiology of this condition continues to be obscure, although there is good reason to believe that in certain cases it may be symptomatic, i.e., secondary to trauma, disturbances in glandular functions, infection etc. Due to the fact that an increased number of these patients have been seen since 1918 (the year of the epidemics of influenza and encephalitis) it has been suggested that there might be a relationship between epidemic encephalitis and narcolepsy. Wilson²⁴, however, in his excellent review of the subject in 1928 makes the following statement "Were one to argue from these considerations, a case might be made out for an actual increase in disordered conditions of sleep somehow related to the times in which we are living, and their ascription to processes out of epidemic encephalitis might be plausibly offered as one of explanation, but at present I am far indeed from being convinced of any frequent etiological association of the latter with the former." In regard to other etiological factors he states "The data which have just been examined are sufficient to show how diverse and heterogeneous is the etiology of the narcoleptic syndrome. To assert the causal fac-

tors is a matter of no little difficulty, a provisional arrangement might be made along the following lines

- 1 Traumatic group
- 2 Psychopathological group
- 3 Endocrine group
- 4 Epileptic group
- 5 Toxic-infective group (epidemic encephalitis, etc.)
- 6 Circulatory group
- 7 Pressure group (cerebral tumors, etc.)
- 8 Group in which no Grundkrankheit has been discovered"

Thrash²⁵, Spiller²⁶ Weech²⁷ and others have reported cases in which there appeared to be a definite relationship between endocrine dysfunction encephalitis and trauma and this disturbance

The age incidence is such that narcolepsy is more frequently encountered in adults than in children. Cave²⁸ in a report of 42 cases found that the age of onset varied from nine to forty-six years with an average of twenty-five years in males and from eight to thirty-seven years in females, with an average of nineteen years. Levin²⁹, in a study of the published cases, found only 4 in which the age incidence was under ten years. In Cave's cases 34 were males and only 4 females, in Wilson's there were 37 males and 7 females, while in Adie's group of 20 (17 from the literature and 3 of his own) there were only 3 cases in females. Judging from the increased number of case reports of this condition in children during recent years one may later find that the disease is not so rare in this age group as the present statistics would lead us to believe.

The diagnosis can usually be established without difficulty if both symptoms are present. If the chief complaint is that of recurrent or frequent attacks of sleeping, there is reason for possible confusion before the proper diagnosis can be established. In some cases the cataplectic attacks may occur alone or for several months before the sleeping attacks appear, and it is in this group that one might be misled by considering epilepsy or petit mal. However, careful questioning will reveal the fact that the attacks of weakness occur only after *emotional* disturbances (especially laughing), are not accompanied by loss of consciousness (for these patients can be readily awakened), or by loss of sphincter control, and that they are not followed by stupor or prolonged periods of unnatural sleep.

The treatment of narcolepsy like all idiopathic disturbances has passed through many forms and processes and the result has always been the same. However in 1931 Doyle and Daniels³⁰ reported successful symptomatic treatment by the oral administration of ephedrin sulphate. Quoting their summary "Six pa-

tients suffering from narcolepsy were treated with ephedrin sulphate. Five were completely relieved of the essential symptoms of irresistible desire to sleep without apparent cause and cataplexy. The sixth patient is relieved of cataplexy and hypnagogic hallucinations, and somnolent tendencies are markedly improved. Similar results have subsequently been reported by Wahl⁴¹, Collins⁴², and Jacobsen⁴³. The usual dose has been 3/8 of a grain, three times a day, although at times it has been necessary to increase this to 3/4 of a grain three times a day before satisfactory results could be obtained. Daniels⁴⁴ recent monograph, with a detailed study of 377 cases, will prove of inestimable value to those interested in this subject.

PLACENTAL EXTRACT

One of the most outstanding advances in pediatrics has been the introduction and employment of human placental extract in both the control and modification of measles. McKhann and Chu^{45, 46}, in their original publications, demonstrated that placental protein extracts contained substances, presumably antibodies, which (1) neutralized diphtheria toxin, (2) blanch scarlet fever rashes, (3) neutralized poliomyelitis virus, and (4) prevented measles in exposed susceptible patients. At present the most extensive investigations in the use of this material have been in the prophylactic treatment of measles. Up to the present time it has been used in over seven hundred individuals⁴⁷ either for prevention or modification of the disease. In ninety-five non-immune patients exposed to measles in the course of hospitalization for other causes, the extract was administered early in the period of incubation in order to prevent the disease, and of this group ninety-one did not develop the disease while the remaining four developed very mild modified measles⁴⁸.

Among the factors which influence the effectiveness of the extract in the prophylaxis or modification of measles are (1) time of injection, (2) dosage and (3) potency of the material. By pooling human placentae in large lots to minimize the variation in antibody content of individual placentas, and by standardizing the dosage of the preparation on the basis of its protein content it has been possible to prepare an extract of almost uniform potency which promises to eliminate variability in results. For prevention of the disease a dosage of 5 cc given within four days after exposure has been found to be effective whereas the same dosage given from the fourth to the ninth day after exposure has modified the disease. In certain instances large doses given after the appearance of Koplik's spots have altered the usual clinical course. Local reactions have occurred

in about ten per cent of the treated patients and have been characterized by pain, tenderness and redness. At times this local reaction may be accompanied by malaise, headache, and a slight febrile reaction, all of which, however, usually subside within 24 to 36 hours. Although serum reactions have occurred in only two out of several hundred treated patients, yet this is sufficient to indicate that adrenalin should always be available whenever the extract is administered.

THE BACILLUS CALMETTE-GUERIN (BCG)

Recent developments concerning the inoculation of children against tuberculosis with the BCG vaccine may be considered under two general headings.

(1) The safety of the method. This question has been attacked, mainly by animal experimentation, to determine whether the organism preserved a fixed (and harmless) virulence under varying conditions. Petroff⁴⁹ has dissociated the bacillus on a gentian-violet egg medium into a predominant R and a rather infrequent S strain, which was pathogenic for animals. Sasano and Medlar⁵⁰ report a dissociation on culture on another medium, with a resultant strain definitely pathogenic for rabbits, guinea pigs, and calves. Feldman⁵¹ has reported some evidence of pathogenicity of the bacillus for guinea pigs, but this was not heightened by subculture or animal passage. Dreyer and Vollum⁵² have stated that the virulence of BCG vaccine could be enhanced by culturing in partial anaerobiosis.

On the other hand, there have been several reports by investigators who have failed to confirm the above findings, and who feel that BCG vaccine is non-pathogenic, at least for laboratory animals. Park and his co-workers⁵³ have repeated the procedures of Petroff, Sasano and Medlar, and Dreyer and Vollum, without any evidence of increased virulence. In three animals out of about 350 inoculated in these experiments a progressive tuberculosis developed, which the authors believed was due to cross infection. Birkhaug⁵⁴ has repeated Petroff's and Dreyer and Vollum's work, without confirmation of their results. Griffith⁵⁵ reports a complete lack of virulence of the organism in guinea pigs, goats, and fowls, and a pneumonic disease in rabbits only after the intravenous injection of large doses.

(2) The production of immunity. It is interesting to note that although approximately a million children have received BCG vaccine yet there is no absolute proof or disproof of its value. The French statistics have not been adequately controlled⁴⁹, in England the method has failed to gain any sanction⁵⁶, and in Germany little inoculation has been reported since the

disaster at Lubeck in 1930 (The official investigation has decided that the deaths of vaccinated children at Lubeck were due to contamination or substitution of the culture used, rather than to change in virulence⁵⁷, although others who have also studied this matter have different views⁴⁹) Perhaps the most valuable studies of the protective value of the vaccine in children are those of Wallgren⁵⁸ in Gothenburg, and of Park and his associates⁵³ in New York. In both of these investigations the best use of the BCG vaccine has been thought to be its intracutaneous administration to young infants in tuberculous families. Wallgren's report includes 194 children and Park's includes 150 children vaccinated in this manner. No deaths have occurred from tuberculosis in either group, while tuberculous mortality in suitable controls was about 3 per cent in each series. The protective value of BCG vaccine inoculation in animals has been repeatedly demonstrated, for a careful study the reader is referred to the work of Birkhaug⁵⁴.

It is possible, in a review of this kind, to mention only a very small portion of the literature on the general subject of the BCG vaccine. It is evident that large and extremely painstaking statistical studies, such as are developing in New York, will be necessary before definite proof of the advantages of BCG vaccination in children is obtainable.

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CASE RECORDS of the MASSACHUSETTS GENERAL HOSPITAL

ANTE MORTEM AND POST MORTEM RECORDS AS USED
IN WEEKLY CLINICAL PATHOLOGIC EXERCISES

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CASES 20221 AND 20222

DR. TRACY B. MALLORY These next two cases are so similar that I am going to ask that both histories be read first and followed by a general discussion of both cases.

PRESENTATION OF CASE 20221

First admission A white boy four and a half years of age was referred from another hospital. The complaints were sore throat and rapid heart.

Family history His mother and father were well but were not living together. One sister two years of age was well. The second pregnancy resulted in a miscarriage at four months. No family history was obtained of allergic manifestations, tuberculosis, lues, insanity, kidney or heart disease in any form.

Past history The patient was delivered normally at full term and was active and vigorous. He was breast fed for nine months. Cod liver oil and orange juice were started at three months, vegetables and cereals at six months. His development was normal. He had possible measles at three months, with rash, conjunctivitis and bronchitis, chicken pox at three and a half years, and scarlet fever at four years, with no sequelae noted. He had never had chorea or joint trouble, but did have frequent sore throats and colds.

Present illness Two and a half years before admission, at two years of age, he had his first attack of tachycardia. His mother found him lying on the ground in the yard, but not unconscious. He complained of pain over the heart. Although he did not appear to be very ill, he was put to bed. Shortly afterward he began to vomit. For about twelve hours he wished to be let alone, and lay quietly. Then the attack passed off. Attacks like this recurred about once a month. One attack with severe vomiting for three days culminated in unconsciousness, and he was taken to a hospital. Since that time he had had eleven admissions for the same cause. His mother felt that his attacks increased in frequency following a fright, and she believed that fear brought them on. They were however preceded by a severe tonsillitis. They lasted from twenty minutes to two weeks. During the six weeks he was in bed with scarlet fever some six months before admission he had no attacks.

Lately attacks had occurred as often as once a week, but were less severe. The boy could usually tell when an attack was coming on. He became fretful and very irritable. During this time his pulse would not be rapid. He might go to bed voluntarily before the actual onset of the attack. During the attacks he vomited and refused all food. His tongue became coated. The stools were normal in number but showed undigested food. If the attacks lasted several days his skin became blotchy, there was circumoral pallor and later general pallor. If the attacks lasted a week his ankles, hands and face began to swell. Medication had not affected the attacks.

Physical examination showed a well developed and nourished, somewhat pale, cooperative boy. His tonsils were moderately injected and cryptic, and there were yellowish spots on the pharynx and tonsils. There was moderate cervical adenopathy. The heart rate was 90, the respiration 24, and the temperature 101°. The blood pressure was 92/52. The left border of dullness was 6.5 centimeters from the mid sternal line, almost a centimeter beyond the midclavicular line. There was a soft systolic murmur heard loudest in the fifth interspace, also heard at the apex and in the pulmonary area. There was an occasional extrasystole, and a questionable third sound along the sternal border at the fourth left interspace.

Laboratory work The examination of the urine was negative. Tuberculin and Hinton tests were negative. The stools were negative. Examination of the blood showed a red cell count of 4,300,000 with a hemoglobin of 65 per cent and a white cell count ranging between 17,000 and 35,000, with 70 per cent polymorphonuclears.

An electrocardiogram on admission showed sinus arrhythmia, rate 50 to 70, prominent P₁ and P₂, left axis deviation, and slightly slurred and widened QRS. During an attack an electrocardiogram showed paroxysmal auricular tachycardia, rate 280.

Course The child had several attacks of paroxysmal tachycardia lasting four to eight days, the rate going as high as 280 per minute. The attacks were as described in the history. The apical rate during the attacks ranged between 200 and 280, with a radial pulse of 100 to 150. Between the attacks the rhythm was often quite irregular, with a rate as low as 60 associated with coupled beats. Acetylcholine was given during one attack without definite effect. Injection of the left dorsal sympathetic ganglia with novocain did not affect the tachycardia. Injection of the right dorsal ganglia with novocain stopped the paroxysm immediately. On two subsequent occasions a paroxysm was stopped by injection of novocain. In order that the effect might be more permanent, on the last occasion after the novocain was injected alcohol was injected into the ganglia, no further paroxysm occurred during

ing the four days he remained in the hospital. At the end of five and a half weeks the child was discharged.

History of interval He was well until two weeks after his discharge, when an attack started which lasted until half past three p m on the fourteenth day after its onset, at which time the heart resumed its normal rhythm. Later in the day, after he had begun to vomit again and his pulse rate had increased, he was brought into the hospital.

Second admission, a month after his previous discharge.

He was pale and in some distress. He had definitely enlarged cervical glands. The heart was not enlarged, no murmurs were heard, the rate was 220. The liver was not tender, but was two and a half fingerbreadths below the costal margin. The blood pressure was 120/80. Physical examination was otherwise negative. The laboratory findings were negative except for a white blood cell count of 25,400.

Course The pulse remained high. The liver increased slightly in size. There was no edema. On the fifth day in the hospital the right inferior cervical and upper dorsal ganglia were injected with novocain. Within one hour the heart rate dropped from 240 to 100 beats per minute. On the following day the child was brighter and much more active. His color was good. The liver was only one and a half fingerbreadths below the costal margin. The pulse was slow and regular.

At four o'clock in the morning of the second day following the injection, the child sat up in bed and screamed with pain. He then became semicomatose. His pulse rate increased. Response was difficult to obtain. At eight o'clock, although acutely ill, he could understand questions. Both pupils reacted to light and were equal in size. There was a drooping of the left eyelid and left facial paralysis. The tongue deviated to the left and a left hemiplegia was present. The right arm and hand were dry and cold and the left arm warm and moist. At ten a m the pulse was 100. There were nystagmoid motions of the eyes and twitching of parts of the body. The abdomen became distended. The child died at half past nine p m after expelling mucus and blood tinged froth from his mouth.

PRESENTATION OF CASE 20222

A twenty months old white native born male infant entered the hospital with the complaint of cough and occasional vomiting since an attack of pertussis two months earlier.

The previous summer a doctor had said he was anemic, but he seemed otherwise well until August when he had whooping cough. After three weeks this progressed into pneumonia and he

spent the next month in a hospital for contagious diseases. Upon returning home from that hospital he still had some cough, mostly at night, and some of the attacks were followed by vomiting. There was no temperature. During the three weeks before admission he had been restless, irritable and fretful and his appetite had been poor.

The past history showed a full term normal delivery. The weight was eight pounds, and he was considered normal in every way at birth. From the first he received a formula of condensed milk and water, with no cod liver oil or orange juice. At entry he was still being fed on a formula with vegetables and egg yolk. He sat up at four months, but had not yet walked at twenty months. His general development had been slow. He was very sick with bronchopneumonia at nine months of age.

The mother and father were aged nineteen and twenty-two respectively, and were in good health. One sibling died at six months with whooping cough. The family history was otherwise negative.

Physical examination showed a pale, chubby, washed-out looking infant not acutely ill. There were signs of rickets in prominent frontal bosses and a rosary. There was some mucoid discharge from the nose. The throat was reddened and there were small shotty glands palpable over the neck. A few scattered musical râles were heard over the chest. The heart was enlarged somewhat to the left of the midclavicular line. The rate was 160 and regular. No murmurs were heard. The abdomen was a "pot belly" with a prominent umbilical hernia. The liver edge was palpable at the level of the iliac crest.

The temperature was 101°. The respirations were 30.

Laboratory work The blood showed a red cell count of 5,800,000, a white cell count of 25,100 and 72 per cent hemoglobin. The blood smear showed a normal differential count, with marked polychromatophilia and anisocytosis of the red cells. Hinton and tuberculin tests were negative.

X-ray examination of the chest showed the hilus shadows prominent on both sides, pleural thickening on both sides, and a prominent bulge in the region of the right auricle.

An electrocardiogram showed paroxysmal tachycardia with a rate of 200.

For the first two days the pulse varied between 110 and 180. On two occasions during the first ten days in the hospital Dr J C White injected the first and second right thoracic sympathetic ganglia and on one occasion the left with novocain, producing a slight Horner's syndrome but no appreciable effect on the pulse. Following this the child was digitalized in an endeavor to slow the pulse, but there was no

slowing of the rate, although the child's general condition was better. Digitalis was then discontinued, and a tincture of veratrin, one minim three times daily, was begun. For a time the boy seemed to be doing well, the heart showing many dropped beats, but clinically he was not so well as he had been under digitalis. He was next given quinidine sulphate, the dose starting with two and a half grains daily and slowly increasing. He did not do well under this régime, and when the dosage reached fifteen grains daily he went into collapse, but recovered when stimulants were given. The quinidine was stopped. Acetyl cholin was tried once, with only slight physiological effect and no effect on the pulse. The patient was next digitalized and put on quinidine sulphate one half grain three times daily by rectum. On this régime the pulse steadily tended downward, and after five days the electrocardiogram showed a normal rhythm for the first time since he entered the hospital, with a rate of 140. After stopping digitalis and quinidine for forty-eight hours the normal rhythm became interrupted by many auricular beats, which disappeared upon restoring quinidine but omitting digitalis. Soon afterward he developed pneumonia and otitis media, but recovered. During the pneumonia his tachycardia returned, and resisted all attempts to restore normal rhythm with digitalis and quinidine. On recovery from the pneumonia, the child again showed improvement in general condition and at times a normal pulse rate (120 per minute). At other times the pulse varied up to 200. He developed pneumonia (left lower lobe) again five weeks after recovery from the previous infection. He was very ill, the pulse rose to between 200 and 220. The temperature then rose steadily to 107°, and he died three days after pulmonary signs appeared, five months after he entered the hospital.

X-RAY INTERPRETATION

DR AUBREY O HAMPTON This film was taken twenty-two days before death and thus one a month and a half. The total transverse measurement of the heart is 9.6 centimeters. The internal diameter of the chest is 17.8 centimeters. I think we cannot compare these two because in this case there was rotation. The diaphragm has come down after the second examination and there seems to be more passive congestion in the lung. The enlargement of the heart is diffuse, but seems to be more to the left in this film, and here we have a triangular shaped heart, but I think that is due to the position of the patient.

CLINICAL DISCUSSION

DR MALLORY I believe you saw these cases, Dr Eustis. Would you like to say a word?

DR RICHARD S EUSTIS I saw the second of the two cases at the end, after the child's first attack of pneumonia, while he was running apparently a paroxysmal tachycardia. We did not know what else to call it. We tried to control it with quinidine without much effect. Dr Boone knows the details of that far better than I do.

Clinically he was a cheerful child sitting up in bed smiling and sleeping most of the time, with a pulse rate of 200. I suspect that the pneumonia was a terminal complication and not the real cause of death, because his pulse rate started climbing before his temperature went up and signs of pneumonia appeared. I suspect that his heart began to go bad and he then developed a pneumonia and died of pneumonia.

I am completely at sea as to the underlying cause of such a condition. I have never seen anything like it before. I have heard of comparatively innocuous paroxysmal tachycardia in older children and young adults, but this picture is entirely novel to me. I hope Dr Mallory can tell us more about it.

DR JOSEPH GARLAND I saw only the second of these two children when he first came in. I think both the cases illustrate the difficulty encountered in controlling paroxysmal tachycardia.

DR HAROLD L HIGGINS I think in the second case the question of pertussis playing a rôle in the etiology comes up. I looked in many textbooks regarding pertussis, and I find no mention of pertussis affecting the heart at all, except that following severe paroxysms of coughing there is sometimes dilatation of the right ventricle. This child had pertussis and a bronchopneumonia which went with it and kept recurring, and no doubt this played some rôle in his cardiac condition.

As to the first case, the cause of death was pretty clearly cerebral embolus. This child showed a much more rapid tachycardia than the second child. He would show distinct signs of cardiac failure after his paroxysmal tachycardia had continued over a period of twenty-four hours. The second child seemed to stand the tachycardia quite well until he got an infection. When his bronchopneumonia became marked we found signs of cardiac failure.

DR PAUL D WHITE These are two rather extraordinary cases of course, not showing the usual results of paroxysmal tachycardia, a condition that is ordinarily considered to be unimportant, well limited in attacks and allowing many years of life. There are patients on record who have had paroxysms of tachycardia for thirty or forty years without causing any serious heart involvement and without any heart disease to start with. The chances of the presence of heart disease in a patient who has par-

oxysmal tachycardia are probably only one in three or four, perhaps less. Serious paroxysms are very uncommon. Here, however, we have two very young children who had fatal complications. There was no clear proof during their illness of organic heart disease, although there was some indication of cardiac enlargement in the second case and in the first child there was an abnormality of the electrocardiogram other than the paroxysmal tachycardia, when the rhythm returned to normal the electrocardiogram revealed abnormal QRS waves, which ordinarily indicate intraventricular block and lead us to think of myocardial disease. We have not found paroxysmal tachycardia, however indicative of congenital defects or in any of the rheumatic involvements of the heart with which we are ordinarily familiar.

I will pass around these records. The first set is a group of three electrocardiograms taken from the first child. The first record of the set was obtained during a paroxysm of tachycardia with a heart rate of 230 and some intraventricular block. The second and third records were taken during the injection of novocain and show either normal rhythm or an alternation of normal rhythm and short paroxysms of tachycardia; there is a persistence of the intraventricular block during the normal rhythm. The second set of records, from the second child, shows normal QRS waves with inverted P waves of auricular paroxysmal tachycardia; in the last strip of the first record you will note that there is one dropped beat, due to the production or occurrence of block. We were able by the use of digitalis to increase the degree of this block and therefore to reduce the heart rate. It is possible that, if there had not been pneumonia, digitalis and quinidine might eventually have controlled the situation. That of course remains in doubt.

The very fast heart rate during the paroxysms of tachycardia in these two children is rather characteristic of this disturbance of rhythm in extreme youth. The fastest rates that I know of were in two infants: one a case of Dr Paul Emerson with a rate of 310 and the other a recent case of Dr Lyons of Washington with a rate of 320, both proved electrocardiographically; the latter case so far as I know is the world's record. The fastest heart (ventricular) rate that we have recorded electrocardiographically in our laboratory at the Massachusetts General Hospital in an adult was 273; this case, a woman, recovered and lived for years after that record was obtained.

DR HOWARD B SPRAGUE. I had charge of the first case when the child was at the other hospital. We were impressed by the fact that change in position or emotional stimuli would produce or terminate the attacks. Standing him on his head would stop an attack. On the other hand falling out of bed might start one. It is

very difficult for me to see how such procedures alter the condition of the myocardium. One would suppose that the effect was produced through some nervous reflex.

The second case I saw also and at one time brought up with Dr James C White the question of cutting down upon and electrically stimulating the vagus nerves. I hope Dr White will tell us something about that procedure.

DR T DUCKETT JONES. The first case I saw over a period of two years at the two outside hospitals. During one attack they found the child had a blood sugar of fifty and gave him intravenous glucose and the paroxysm suddenly stopped. With subsequent attacks however the blood sugar was always normal, so the influence of hypoglycemia did not help. The emotional side in this case was very striking. One day I went into the ward and picked up a balloon that was lying on the table and the child became violently angry and started to have a paroxysm of tachycardia at about 200 a minute. I hope Dr White is going to have something illuminating to say on that. So far as I know everything was tried for a period of two years that possibly could have been tried. That is why he was sent down to Dr White.

DR JAMES C WHITE. Of course paroxysmal tachycardia is supposed to be an intrinsic disease of the pace regulating mechanism of the right auricle. It was a question whether doing anything to reduce the activity of the extrinsic cardiac nerves could control these attacks by diminishing the irritability of the sinoauricular node. There was some indication for that in this patient's history, as his attacks were often set off by emotional factors and also the fact that when he had a high fever his attacks stopped. A high fever we know diminishes certain forms of sympathetic activity. In order to test the effect of paralysis of the cardiac accelerator nerves I blocked the upper four thoracic sympathetic ganglia on the left side with novocain. This had no effect at all. When I tried it on the right side there was an immediate cessation of his tachycardia that you can see by looking at the electrocardiograms. It was successful twice.

I think the mistake we made with him was in not going on that evidence and resecting these ganglia rather than attempting an alcoholic injection with which I had had no experience in so small a child. If operation had been done there is a fairly good chance that he would not have developed any more paroxysmal tachycardia. Possibly if that had been done in the beginning he would not have shot off his final and fatal embolus. Dr Leriche in Strasbourg has operated on two of these cases. One has been followed for a period of a great many years with no recurrence of the tachycardia. I believe Dr Paul White thinks that the first case of angina pectoris that was operated on in 1916 by

Jonnesco was very probably paroxysmal tachycardia

In the second case novocain gave no evidence of benefit. Instead of cutting down and stimulating the vagus, as Dr Sprague suggested, he was given acetyl cholin, which is known to produce a very definite stimulation of vagal activity. This gave no benefit, and further neurosurgical investigation was discontinued.

CLINICAL DIAGNOSES, CASE 20221

Paroxysmal auricular tachycardia
Cerebral embolism
Pulmonary congestion
Left hemiplegia

ANATOMIO DIAGNOSES, CASE 20221

(Paroxysmal auricular tachycardia)
Cardiac hypertrophy
Mural thrombus, left ventricular wall
Cerebral embolism and infarction
Congenital bicuspid aortic valve
Endocarditis, chronic, tricuspid
Diffuse thickening of the endocardium
Chronic passive congestion of liver and spleen
Hydrothorax, bilateral.
Hydropericardium
Pulmonary congestion
Dilatation of stomach
Intussusception

CLINICAL DIAGNOSES, CASE 20222

Paroxysmal tachycardia
Lobar pneumonia, left lower

DR HAROLD L HIGGINS' DIAGNOSES, CASE 20222

Paroxysmal tachycardia
Bronchopneumonia, left lower

ANATOMIO DIAGNOSES, CASE 20222

(Paroxysmal auricular tachycardia)
Hypertrophy and dilatation of heart, especially right auricle
Bronchopneumonia, bilateral.
Petechial hemorrhages of mesentery, thymus, epicardium
Chronic fibrous pleuritis, left
Hydrothorax, left, slight

PATHOLOGIC DISCUSSION

DR MALLORY The autopsies on these two children showed nothing anatomical which might explain their tachycardia.

The older child, the first case, had an abnormal heart shown for one thing by a congenital bicuspid valve. There was absolutely no evidence of endocarditis of this valve and the microscopic anatomy fits perfectly the criteria of Lewis and Grant*. We found moreover in the apex of the left ventricle a rather loosely adherent antemortem thrombus. It was attached

at only one very minute spot to the ventricular wall and the ventricular musculature immediately under it was perfectly normal. I think there is no doubt that it was from this thrombus that the embolus broke off which lodged in one of his anterior cerebral arteries in the frontal lobe and was the immediate cause of death.

A point which immediately arrested our attention was the unusual thickness of the endocardium of the ventricles, particularly the left one. When a heart is opened at the autopsy table the endocardium of the ventricles is very translucent and one can easily see the pink musculature through it. The endocardium is normally of varying thickness in the individual chambers and in the left auricle is normally so opaque that it appears as a white layer through which we cannot see the musculature at all. In this child the endocardium throughout the heart was of the same thick white opaque character that you normally find in the left auricle. This was particularly striking in the left ventricle. Two minute fibrous tabs, presumably healed vegetations, were found on the tricuspid valve.

Microscopic sections show a few very minute areas of scarring and fibrosis within the myocardium. The endocardium shows collagenous and elastic thickening of extreme degree. I have never seen, except over an old area of infarction in an elderly man, so thick an endocardium as this boy shows. Otherwise the findings are entirely negative. It is possible to imagine that this thickened endocardium might have interfered in some way with conduction in the bundle. Heart block, however, was an inconspicuous feature of the case. The sinoauricular node is the only point where an anatomical lesion would explain the auricular tachycardia, and the node so far as we can make out is entirely negative.

In the second case there was a slight degree of thickening of the endocardium, although not nearly so marked as this, and numerous sections from all parts of the heart, including the sinoauricular node, fail to show any evidence of myocardial scarring or any acute myocardial process.

It seems to me that one must consider these cases as essentially functional heart disease and has to admit the possibility of death from functional disease. In living patients in the clinics we are always constantly aware of the frequency of functional disease, but on the autopsy table one ordinarily assumes that it can be ruled out. I do not believe that we are always justified in doing so, however. I feel quite sure that there are certain types of functional disease so severe that they can cause death, and I personally should be inclined to place these two cases in the group.

DR PAUL D WHITE May I add a word

*Lewis Thomas and Grant. Ronald T. Heart 10: 21, 1923.

about the first case? I should think that if there is that extensive abnormality of the endocardium it must also have involved the right auricle. There might thus be an organic basis for irritability of any part of the auricular myocardium which would render more likely the precipitation of paroxysmal tachycardia through nervous channels. It is conceivable that this abnormality of the endocardium might involve also the branches of the auriculoventricular bundle of His which lie just under and in contact with the endocardium, thus explaining the intraventricular block found in the electrocardio-

gram. We have seen such thickening of the endocardium in a few instances of congenital heart disease, particularly in two or three in which there was pulmonary stenosis or stenosis of the infundibulum of the right ventricle, which suggests that there might have been an intrauterine infection, that is, an endocardial infection during fetal life with or without involvement of the valves.

DR MALLORY: I think one is constantly meeting the problem as to which is art and which is horse. I do not think we can settle it in this case.

The New England Journal of Medicine

SUCCESSOR TO

THE BOSTON MEDICAL AND SURGICAL JOURNAL

Established in 1828

Published by THE MASSACHUSETTS MEDICAL SOCIETY
under the jurisdiction of the

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SUBSCRIPTION TERMS \$6.00 per year in advance postage paid
for the United States, Canada \$7.04 per year \$8.52 per year
for all foreign countries belonging to the Postal Union

Material for early publication should be received not later
than noon on Saturday. Orders for reprints must be sent to
the Journal office, 8 The Fenway

The Journal does not hold itself responsible for statements
made by any contributor

Communications should be addressed to The New England
Journal of Medicine, 8 The Fenway Boston Mass

The Massachusetts Medical Society

THE WORCESTER MEETING

LAST June the Worcester District Medical Society cordially invited the Massachusetts Medical Society to hold its next annual meeting in Worcester. Often such an invitation is purely perfunctory, and those extending it feel that their responsibility ends with its acceptance. But the Fellows of the Worcester District feel keenly their position as hosts, and have done everything in their power to make the meeting a success. At their annual meeting on May 9, 1934 they unanimously voted to assume the expense of entertainment for the Fellows and their wives, and a very generous sum was set aside for that purpose.

The Local Committee of Arrangements has been most cooperative, and helpful to the State Committee, and has planned excellent clinics for Monday, June 4, at all the leading hospitals

of the city. After these clinics, luncheons will be served at the hospitals through the courtesy of the Worcester District Medical Society. The Local Committee has also arranged with the Worcester, Taunuck, and Wachusett Country Clubs to permit all Fellows and guests of the Massachusetts Medical Society to play golf as guests of the Worcester District Medical Society at any time during the three days of the meeting.

The Annual Meetings have always provided for the Fellows of the Massachusetts Medical Society an opportunity not only to refresh or make additions to their professional knowledge, but also to renew old friendships and make new ones. The value of the social aspect of these meetings should not be underestimated. In the past when entertainment has been provided for ladies, many Fellows have come with their wives, and the enjoyment of the meetings has been greatly enhanced.

Our hosts of this year have arranged an elaborate program of entertainment for visiting ladies, the details of which appear on page 1194 of this issue.

Women are taking an increasing interest in the activities of the medical profession. Should we not now consider the advisability of forming in Massachusetts a branch of the Woman's Auxiliary to the American Medical Association?

It is a pleasure for us to welcome the wives of Fellows at our meetings, and we feel that such contacts should give them a better understanding of their husbands' work.

"CANCER IS CURABLE"

THE bright side of the cancer subject needs to be occasionally repolished and presented anew. The results of all the work that is going steadily on merit a feeling of optimism, but there is enough that is disheartening to make us occasionally forget that progress is being made. It is well, therefore, that the *Cancer Clinic Bulletin* of the Massachusetts Department of Public Health should this month summarize the symposium conducted by the American College of Surgeons in October on the curability of cancer.

Six objectives were in view when this symposium was proposed.

1 To impress upon the practitioners of scientific medicine, and indirectly upon the public, the fact that carcinoma is curable by the use of well known and established methods of treatment.

2 To point out in a convincing manner that if all cases of cancer could be diagnosed early and treated promptly in their incipency, the annual death rate from the disease, now recorded as one hundred and fifty thousand in the

United States and Canada, would be reduced by at least thirty-three per cent, or fifty thousand per year

3 To bring together a group of distinguished clinicians to present definite statements of the impressive number of cases of cancer that have actually been cured

4 To secure the maximum of ethical publicity of the reports

5 To convince the profession and the public that even though cancer is already apparently in a later stage of its development, if it is subjected to proper treatment its progress may often be delayed and the disease not infrequently cured

6 To establish a universal policy among physicians and surgeons to report cancer cures rather than to present the involved comparative statistics that dwell particularly on the cases not cured

Reported cancer cures during the years 1932 and 1933 are forthwith summarized, the grand total of five year and over cures amounting to twenty-four thousand, four hundred and forty-eight. The percentage of cures, of course, varies in different localities and in different types of malignancy

Dr Malcolm B Clopton of St Louis reported one hundred and twenty-six breast cancers. Of thirty-seven cases with the disease in the breast alone, there were twenty-four, or sixty-four per cent living and well five years after operation. Of eighty-nine cases in which the cancer extended beyond the breast, twenty-seven, or thirty per cent were alive and well. Harrington and Judd, of Rochester, Minnesota, reported on a series of two thousand six hundred and fifty-six cases that twenty-six per cent of those with, and seventy-one per cent of those without involvement of lymph nodes had survived the orthodox five-year period. Greenough of Boston reported a total salvage of twenty per cent of cases operated on between the years 1894 and 1926. Other similarly encouraging reports were included

Of one hundred and fourteen cases with carcinoma of the cervix Anspach of Philadelphia reported 18.4 per cent cures, and Crossen of St. Louis twenty-four per cent. Healy of New York reported eighty-five per cent of five-year cures in cancer of the body of the uterus. Charles C Lund of Boston presented an analysis of the cases of carcinoma of the buccal cavity and lips treated at the Collis P Huntington Memorial Hospital from 1918 to 1926, reporting that of four hundred and thirty-two cases of carcinoma of the lip and one thousand one hundred and thirteen cases of carcinoma of the buccal mucosa, one hundred and seventy-five and sixty-two, respectively, were cured

An imposing array of figures, they prove that

the case against cancer is by no means hopeless, indicating at the same time that as progress in early diagnosis and effective treatment is made, still greater improvement will result

AN INTERESTING SITUATION IN MICHIGAN

At a meeting of the House of Delegates of the Michigan State Medical Society, April 12, 1934, approval of the principles of Health Insurance was voted and the Committee on Medical Economics of this body was instructed to proceed in developing a practical plan relating thereto

In the history of this movement certain facts and details of procedure are of interest

In July, 1933, the Committee on Medical Economics of the Michigan Society was directed "to continue its study, and prepare and present plans for Health Insurance." At this time the House of Delegates adopted the following designated policies for the guidance of the Committee

- 1 Free choice of physician by the insured
- 2 Limitation of benefits to those of medical service
- 3 The control of medical service benefits by the profession
- 4 The exclusion of individuals or organizations that might engage in health insurance for profit

After a meeting in September, 1933, the Committee undertook as its first task this matter of health insurance, and since conflicting reports concerning the validity of the principles of health insurance gave the Committee concern, it was felt that a field study of health insurance in Europe should be conducted. In anticipation of this study the chairman of the Executive Committee of the Michigan Society House of Delegates felt that there should be a meeting in Chicago with representatives of the American Medical Association. This conference was held and is described by Dr Henry A. Luce, speaker of the Michigan House of Delegates in the following words

"The Chairman of the Executive Committee concluded that the subject was one that concerned not only Michigan but all the other states as well. He, therefore, concluded that the best results would be obtained if the Executive Committee met in Chicago with our employees in the national organization. The purpose of such a meeting was obvious. Michigan sought advice and guidance in the solution of its problems

"To me the results of this meeting with our employees were both unsatisfactory and disturbing. Those present, in addition to the Executive Committee and Dr Bruce, were Dr

West, Dr Leland, Dr Woodward and Dr Carey, Ex-President of the A M A

"The Michigan delegation placed its problem before these men and asked for specific information

"The information requested was not forthcoming and the general attitude seemed antagonistic. While Dr West kindly explained the workings of the A M A, the discourse was not on the subject and failed to answer our questions. Dr Leland appeared to be guarding 107 pages of manuscript on the subject of health insurance, but stated he was not in a position to report. Dr Carey magnanimously offered advice that seemed to be a bit gratuitous. He said that we should thoroughly thrash out the whole subject, that we should not involve ourselves, and that Michigan should delay lest it get into trouble. In short, the advice was 'Do nothing'. All this, of course, gave little information and less comfort to the Michigan Executive Committee. During the discussion, Dr Bruce asked Dr West certain questions concerning the publications of the A M A, and the answers were anything but satisfactory. The representative of the A M A assured the Executive Committee of the Michigan State Medical Society that they had no objection to Michigan making an independent study of European plans."

Six days later Dr Henry A Luce and Dr Nathan Sinai went abroad for a study of Health Insurance, and on their return submitted a report to the Economics Committee of the House of Delegates of the Michigan Society, February 23, 1934, and a copy was forwarded to the Executive Committee of the Board of Trustees of the A M A.

A copy of this report appears in the supplement of the *Journal of the Michigan State Medical Society* for May, 1934. This report should be carefully read by all interested in health insurance, because it sets forth the evolution of the present plan in operation in England.

On receipt of this Luce Sinai report the Economics Committee prepared a plan with recommendations under the title of "A Plan for Mutual Health Service" which was submitted to the House of Delegates of the State Society, at a special session, April 12, 1934, and signed by the several members of the Committee with Dr Warnshuis as secretary.

This report, a copy of which appears on page 1185 of this issue, of the *New England Journal of Medicine*, after due consideration and prolonged debate was adopted by the House of Delegates by a vote of sixty-two to nine. We hope that it will be studied by doctors and dentists. An interesting feature of this movement is the cooperation of the dentists with the physicians as shown by the financing of the Luce Sinai Commission by a joint grant from the

Michigan State Medical Society and the American College of Dentists. This is evidence of the growing appreciation of the important part which dentists play in health problems.

After the acceptance of the report of the Economics Committee, the House of Delegates adopted a resolution directing this committee to prepare and present a budget for completing the study of the program outlined in the report and make plans for carrying the recommendations into operation.

Thus far the Michigan movement is apparently waiting to learn of any reaction of the House of Delegates of the American Medical Association to the report which was forwarded to the officers of that body, and the creating of a budget for trials of the suggested plans in some of the counties of Michigan.

Here is evidence of concentration of constructive medical interest in some phases of so called health insurance under the direction of a state medical society.

It seems strange that organized medicine in this country has been loath to take the initiative in adopting some plan which, under medical guidance, might serve the interests of certain groups in their health problems. A definite obstructive attitude has been evident on many occasions with bitter and uncompromising criticism. The history of health insurance in other countries has placed the medical profession in an unfortunate position from which it has been only partly extricated.

Michigan has made an effort to build a constructive program based on the recognition of her responsibility to meet local conditions.

The reaction of the House of Delegates of the American Medical Association to this movement of one of its constituent societies will be watched with interest. Since the Michigan Society has taken steps to have this plan considered by the legislative and executive body of the A M A, the delegates of other state societies ought to be familiar with the plan presented by the Michigan Society when it comes up for discussion in the meeting of the House of Delegates of the A M A.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors

MUNRO DONALD A B, M D Harvard University Medical School 1916 F A C S Assistant Professor of Neurological Surgery, Harvard Medical School Visiting Surgeon, Neurological Surgery, Boston City Hospital. His subject is "The Diagnosis and Treatment of Subdural Hematomata. A Report of Sixty-two Cases." Page 1145. Address Boston City Hospital, 918 Medical Building, Boston, Massachusetts.

PATTERSON, ROBERT L. M.D. Harvard University Medical School 1932. Interne, Surgical Service, Peter Bent Brigham Hospital. Address: Peter Bent Brigham Hospital, 721 Huntington Avenue, Boston, Massachusetts. Associated with him is

GROSS, ROBERT E. M.D. Harvard University Medical School 1931. Interne, Pathological Service, Peter Bent Brigham Hospital. Address: Peter Bent Brigham Hospital, 721 Huntington Avenue, Boston, Massachusetts. Their subject is "Adenocarcinoma of the Stomach." Page 1161

ROWE, ALLAN WINTER. S.B., S.M., A.M., Ph.D. Director of Research, Evans Memorial, Massachusetts Memorial Hospitals. Professor of Chemistry, Boston University School of Medicine. Address: 80 East Concord Street, Boston, Massachusetts. Associated with him is

McMANUS, MARY A. A.B. Assistant in Biochemistry, Evans Memorial, Massachusetts Memorial Hospitals. Address: 80 East Concord Street, Boston, Massachusetts. And

PLUMMER, ALBERT J. A.B., A.M. Fellow in Biochemistry, Evans Memorial, Massachusetts Memorial Hospitals. Address: 80 East Concord Street, Boston, Massachusetts. Their subject is "The Metabolism of Levulose. IV. The Hepatic Influence on the Utilization of Galactose and Levulose." Page 1163

COTTON, FREDERIC JAY. M.D., and MORRISON GORDON MACKAY, M.D. See page 817, issue of April 12, for records of authors. Their subject is "Pathological Dislocations of the Shoulder Backward and Rotation Deformity." Page 1169

ELEY, R. CANNON. M.D. University of Virginia Department of Medicine 1925. Associate Physician, Infants' Hospital and Children's Hospital, Boston. Instructor in Pediatrics and Communicable Diseases, Harvard Medical School. His subject is "Advances in Pediatrics." Page 1170. Address: 264 Beacon Street, Boston, Massachusetts

The Massachusetts Medical Society

ANNUAL MEETING OF THE COUNCIL

The annual meeting of the Council will be held in the Ballroom of the Hotel Bancroft, Worcester, on Tuesday, June 5, 1934, at 12 o'clock, noon

Business

1. Reading record of last meeting in abstract
2. Nominating Committee retire to deliberate

3. Report of Committee on Membership and Finance
4. Reports of committees to consider petitions for restoration to the privileges of fellowship and new committees to be appointed
5. Report of the Treasurer
6. Action on draft of revised By-Laws, submitted to each Councilor with the official program, May 6. A second revision by the committee appointed by the Council
7. Reports of Standing Committees and Special Committees
8. Election of Officers and Orator by ballot
9. Appointment of committees for ensuing year, both Standing and Special
10. Incidental business

WALTER L. BURRAGE, *Secretary*
Brookline, May 29, 1934

Councilors are asked to sign one of the two attendance books before the meeting

MISCELLANY

REPORT OF THE COMMITTEE ON MEDICAL ECONOMICS TO THE HOUSE OF DELEGATES OF THE MICHIGAN STATE MEDICAL SOCIETY†

MUTUAL HEALTH SERVICE

1. The purpose of Mutual Health Service is to provide, through the agency of a non profit organization health services at agreed costs to employed persons and the families of employed persons whose annual income does not exceed \$_____*

For the purposes of this plan the word "family" is defined as including in addition to the employee, any or all of the following *unemployed and dependent members living in the home of the employee* wife (husband), sons daughters

With the exception of such limitations as are hereinafter provided the term "health services" shall include the services of Doctors of Medicine, Doctors of Dentistry Registered Nurses, Pharmacists, laboratories and hospitals as well as drugs and medical surgical and optical appliances

2. In accordance with the spirit of mutual responsibility between those who provide and those who benefit by the provision of health services the general direction of Mutual Health Service shall be as follows

A Board of Governors

The Board of Governors, the members of which shall serve without pay, shall be constituted as follows

Three (3) Doctors of Medicine elected by the House of Delegates of the Michigan State Medical

†Supplement to Journal Michigan State Medical Society May 1934 Vol. XXVIII No. 5

The upper income limit was placed at \$1500

Society to serve for a period of three years, except that of the first three elected one shall serve for one year, one for two years and one for three years. Thereafter one Doctor of Medicine shall be elected annually for a period of three years.

One (1) Doctor of Dental Surgery elected by the House of Delegates of the Michigan State Dental Society to serve for a period of three years.

One (1) Pharmacist elected by the State Pharmacy Association to serve for a period of three years.

One (1) Registered Nurse elected by the State Nurses Association to serve for a period of three years.

One (1) Hospital Superintendent elected by the State Hospital Association to serve for a period of three years.

The above members of the Board of Governors shall elect for a period of three years two (2) additional members to represent the industries cooperating in Mutual Health Service and two (2) additional members to represent the recipients of health services.

3 Within such limitations as may hereinafter be provided, the general powers and duties of the Board of Governors shall be as follows:

- a The supervision of the administration of Mutual Health Service
- b The appointment of administrative personnel.
- c The preparation of such rules and regulations as may from time to time become necessary to maintain or clarify the purposes of Mutual Health Service
- d The preparation of fee schedules for the particular health services hereinafter described
- e The administration and control of financial matters including the collection, expenditure and investment of funds
- f The appointment of such committees as may be necessary to the proper functioning of Mutual Health Service

4 Local direction in each county or district where Mutual Health Service is maintained shall be by the following committees and a District Mutual Health Committee:

- a Local Medical Committee
- b Local Dental Committee
- c Local Nursing Committee
- d Local Hospital Committee
- e Local Pharmacy Committee

5 Each Local Committee shall be composed of five members elected or appointed for a period of three years by the body represented. In addition to such powers and duties as may hereinafter be provided the general functions of each Local Committee shall be as follows:

- a Local Medical Committee

1 The preparation of lists of general practitioners and of specialists for the provision of medical services

2 The control of the quality of medical service

3 The hearing of and action upon complaints involving physicians or physicians and patients

4 The reference, with recommendations, of those complaints involving a physician and a member of any other professional group to the District Mutual Health Committee

5 The transmission of recommendations dealing with financial matters to the District Mutual Health Committee

(The powers and duties of other Local Committees representing professional groups would be comparable to the above.)

6 The District Mutual Health Committee shall be composed of the chairmen of the Local Committees, who shall elect one (1) additional member to represent the local industries cooperating in Mutual Health Service and one (1) member to represent the local recipients of health services.

The general powers and duties of the District Mutual Health Committee shall be as follows:

- a The hearing of and action upon complaints transmitted by Local Committees
- b The transmission, with recommendations, of matters involving finances to the Board of Governors

7 Any party involved in an action taken by a Local Committee shall have the right to appeal to the District Mutual Health Committee.

Any party involved in an action taken by the District Mutual Health Committee shall have the right to appeal to the Board of Governors.

8 The Board of Governors shall maintain a Local Executive Secretary and such other personnel as may be necessary in each District where Mutual Health Service is established. The Local Executive Secretary shall serve as executive secretary for each Local Committee and the District Mutual Health Committee.

9 The employee shall have the right to choose a general practitioner of medicine and a general practitioner of dentistry. There shall be no restrictions to such freedom of choice except as follows:

- a The general practitioner shall reside in the employee's city or within a reasonable distance from the employee's residence. "Reasonable distance" shall be determined by the Local Committee.
- b The general practitioner shall hold a license to practice his profession in Michigan.
- c The general practitioner shall have signified in writing his intention to provide service in accordance with the plan of Mutual Health Service.

10 The employee shall have the right to change his selection of a general practitioner of medicine or of dentistry in accordance with either of the following procedures:

a. By filing with the Local Executive Secretary a written notice of the intended change 14 days before any of the following dates January 1, April 1, July 1, October 1, requesting a change on any of the above dates and naming the successor to his general practitioner

b. By filing with the Local Executive Secretary a written request for an immediate change, stating the reason or reasons for the request and naming the successor to his general practitioner

11 The general practitioner of medicine or of dentistry chosen by the employee shall have the right to accept or reject the application for his services. If he accepts he shall have the right to subsequently withdraw his acceptance in accordance with the following procedures

a. By filing with the Local Executive Secretary a written notice of his withdrawal 14 days before any of the following dates January 1, April 1, July 1, October 1

b. By filing with the Local Executive Secretary a written request for immediate withdrawal stating his reason or reasons for such withdrawal

12 The names of persons accepted for services by the general practitioners shall be known as the general practitioner's "Family List." The total number of persons on the Family List shall not exceed one thousand (1,000) for any one general practitioner, provided, however, that in those cases where a general practitioner has one or more salaried assistants licensed to practice in Michigan the number of persons on the Family List shall not exceed sixteen hundred (1,600). The District Mutual Medical Committee shall be empowered to increase the limit from 1,600 to 2,000 when, in its judgment, such extension or increase is necessary

13 The general practitioner of medicine shall provide for the persons on his Family List such services as may be reasonably expected according to the standard of the community in which he practices his profession. These services shall include physical examinations, immunity tests, immunizations, prenatal and postnatal care and such services other than those designated as specialists' services provided however that the general practitioner may include specialists' services in accordance with the regulations adopted by the Local Medical or the Local Dental Committees and approved by the Board of Governors

14 Each person on the Family Lists shall be entitled to the following health service

a. Home office and hospital services of a general practitioner of medicine and such services of medical specialists, nurses, pharmacists, laboratories and hospitals as may in the opinion of the general practitioner be necessary provided, however, that certain services shall be limited as follows

1 Hospital services shall not be provided for mental diseases and tuberculosis

2 Hospital services shall include a semi-private or ward bed, operating rooms, medicines, dressings, laboratory and other services that may be provided in the hospital for a period of 21 days during any one year. For any illness requiring hospitalization for more than 21 but less than 90 days, the Mutual Health Service shall pay 75 per cent of the per diem hospital charges

3 The services of a special nurse shall be limited to a period of 30 days during any one year. The services of a visiting nurse shall be limited to 60 days during any one year

4 Drugs shall be prescribed by a Doctor of Medicine to any member of the Family List at a cost of 25 cents for each prescription. The difference, if any, between this cost and the total cost of the prescription shall be paid by Mutual Health Service. Drugs shall be prescribed in accordance with such regulations as may be approved by the Local Medical and the Local Pharmacy Committees

5 The care of any illness or accident provided for under the Workmen's Compensation Act shall be excluded from Mutual Health Service

15 The costs of services shall be borne by the employee or jointly by the employee and his employer. Payments shall be made in advance either weekly, monthly, semi-annually or annually at a rate or rates established by Mutual Health Service

16 For the period of the experiment the annual costs of services per person on the Family Lists shall be \$27.88

17 The annual sum of \$27.88 per person on the Family List shall be expended as follows

a General Practitioner of Medicine.....	\$ 5 00		
1 Report of Annual Physical Exam.....	50		
2 Report of Immunization.....	25	31	%
b Medical Specialists' Services.....	3 00		
c Dental Services.....	5 00	18	%
d Nursing Services.....	2 50	9	%
e Hospital Services.....	5 00	18	%
f Drugs, Medical, Surgical, Optical Appliances.....	2 00	7	%
g Laboratory Services.....	1 00	3 5	%
Total.....	\$24.25		
h Administration 10%.....	2 42	9	%
i Surplus 5%.....	1 21	4 5	%
Grand Total.....	\$27 88	100	%

18 For each community or area in which Mutual Health Service operates, fee schedules shall be prepared for the following services shown in Paragraph 17

- 1 Specialists' services in Medicine and Dentistry
- 2 Nursing services
- 3 Hospital services
- 4 Drugs, Medical and Surgical Appliances
- 5 Optical services
- 6 Laboratory services

The fee schedules shall be prepared by the Local Committees and transmitted through the District Committee to the Board of Governors for final action

19 Any general practitioner of medicine or of dentistry whose qualification for the provision of any specialist service is approved by the Local Medical or the Local Dental Committee shall be entitled in addition to the capitation fee to 75 per cent of the specialist's fee as shown on the fee schedule

The Local Committee shall have power to grant, reject or withdraw approval for specialist service or services by the general practitioner

20 In the event that the cost for any service is proportionately higher than anticipated the total sum collected for that service shall be pro-rated among the individuals or institutions providing that service. In the event that the cost for any service is lower than anticipated the excess shall be added to the Surplus or expended according to the judgment of the Board of Governors

21 Surplus funds shall be maintained in separate accounts for each area or community and shall be expended or invested by the Board of Governors

22 Two per cent (2%) of the sum allotted to the general practitioners of medicine and dentistry shall be deducted and placed in a "Postgraduate Training Fund". Expenditures from this fund shall be made by the Board of Governors with the advice of the State Medical and State Dental Societies

The Committee feels that in the foregoing program there is presented a temperate policy for the guidance of the medical professions in the United States. It is a policy that preserves the essence of American practice in giving primary consideration to the potential consumers of health services. In this consideration those things that the profession has long cherished because they have been subjected to the retort of experience and have been found satisfactory are not only retained but strengthened. It is the Committee's opinion that the program presented is the studied and constructive answer of the profession to those encroachments upon private practice that have their origin in the unequal distribution of the services the profession commands

If the House of Delegates approves the program, the Committee recommends that the action be given full publicity. Michigan is practically the only industrial state that remains comparatively free of numerous plans and projects for the provision of health services. This freedom can be attributed to no other factor than the action of the Michigan State Medical Society in undertaking constructive studies. It must remain free until the profession

has had the opportunity to experiment. Nothing will insure this freedom as completely as publicity.

At the same time in many other states the profession finds itself in a difficult position. Lacking a constructive program it is easy prey for commercial or political influences. Publicity given to the Michigan program may, therefore, exert a far reaching effect in providing the profession in other states with the methods and materials for combating destructive influences. Against these influences nothing is more effective than the sure weapon of constructive action.

If the program presented is acceptable to the House of Delegates the Committee proposes the following steps in order to begin the experiment as early as possible:

- 1 The discussion of the proposals with employers and employees. Naturally the communities or areas selected for the experiment will depend upon the reception given to the plan by these groups.
- 2 The presentation of the final detailed plan to the House of Delegates.
- 3 The presentation of the plan to the professional groups in the area or areas selected for the experiment.
- 4 The formation of the local and state committees already mentioned.
- 5 The preparation of reports of the House of Delegates during the progress of the plan.
- 6 The preparation of a final report, with recommendations, at the completion of the experiment.

There are certain implications in the plan for Mutual Health Service that merit the attention of the House of Delegates. These deal with the relation of the plan to the care of indigents and to public health activities.

The Committee sees no reason why the plan should not be extended to include the care of indigents. It feels that with few exceptions the profession's method of handling this problem has been hesitant and generally ineffective as a result of the lack of a definite program. It is not necessary to defend the assumption that while a person may be designated as "unemployed and indigent" his health needs differ little from those of his more fortunate neighbor.

It is generally accepted that the responsibility for the health needs of indigent persons rests upon the community. Nor is the responsibility lessened because it has been shifted to the profession in certain communities. Therefore, the Committee recommends that the Local Committees engage in a joint effort to extend Mutual Health Service to indigents. The method of extension is for the community to enter into a contractual arrangement with Mutual Health Service. Such an arrangement will permit the unemployed and indigent person the same relationship to his general practitioner as he enjoys while employed.

The effect of Mutual Health Service upon public health activities is fairly obvious. In brief, it means an expansion of the services of preventive medicine and dentistry by private practitioners and a concentration of public health work upon educational activities. The Committee feels that such concentration will be heartily approved by the public health agencies concerned.

Thought should also be given by the Delegates to the probable development of a movement in the United States toward some form of compulsion with respect to the purchase or distribution of health services. There is little doubt that the movement has gained momentum and that the coming legislative sessions in many states will see bills presented for compulsory health insurance.

If the experiment with Mutual Health Service is successful the profession will be in an exceedingly strong position to direct public opinion and thereby control legislative action in the interests of public welfare. It is obvious that the advantage of controlling medical legislation will lie with the first constructive program presented. If, in addition to being first the program has a record of successful demonstration, the advantage will become great enough to direct legislative action. Only in this manner may the profession hope to successfully combat commercialism and the profit motive in the distribution of health services.

SUPPLEMENTAL REPORT OF THE COMMITTEE

As a supplement to its formal report your Committee presents certain additional items for consideration and action by the House of Delegates.

The first item deals with the matter of the upper limit of income and upon this question Dr. Sinai will present some data for the information of the delegates.

The second question deals with the association of official public health work with Mutual Health Service. It will be noted that public health is not represented on any of the Committees controlling Mutual Health Service. After some discussion of this aspect of Medical Care your Committee concluded that, if the general plan is approved the House of Delegates should decide the following proposal:

That in order to complete and unify all the health services in Michigan the State Health Commissioner should be made a member of the Board of Governors and either the local or county health officer a member of the District Mutual Health Committee.

The third item deals with your Committee's suggestion for publicizing the program for Mutual Health Service.

In addition to its specific studies in Michigan your Committee has collected information on recent developments in medical care in other parts of the United States. Because of its knowledge of these developments your Committee has suggested that if Mutual Health Service is approved by the House

of Delegates, the plan be given as wide publicity as possible.

The purpose of this publicity is twofold: first, to refute the widespread charge that the profession is unwilling to apply the experimental method to any solution of its economic problems, and, second, to offer to the profession and the public a constructive program as a weapon against such harmful trends as are already developed or are in the process of development. Your Committee feels that Mutual Health Service, if adopted by the House of Delegates, is the unanswerable reply to the profession to the charge that it has failed to give studied consideration to the economic problems of medical care. It also feels that this "declaration of principles" is a standard around which both the public and the professions may rally in mutual protection and with mutual confidence.

A brief description of certain of the developments in the country will serve to substantiate the Committee's opinion that a constructive program is at this time a pressing need.

Many county societies have undertaken projects in health insurance with little study and with almost no central or state authority. The county societies cannot be criticized too greatly for this action. It has come in response to the professions and the public's demand "to do something," and in most cases the state societies, being without any program, have been willing to permit the county societies to bear the brunt of any ill-advised action. This situation is particularly acute in the western states.

Your Committee feels that the major danger of this lack of state society direction lies in its tendency to develop commercial competition between groups of physicians and between other professional groups, as well. The results of such commercial competition have been evident for many years in the application of Workmen's Compensation in certain states. It was for this reason that your Committee stressed the comprehensive program with a centralized and professional financial control.

In this same connection, your Committee has noted the development of hospital insurance in over twenty states. There is nothing particularly wrong in the principle of hospital insurance. However, in the absence of a more comprehensive program your Committee feels that hospital insurance can expand in only one direction and that is to include other services. The demand for expansion has already arisen from the insured public. This means that, as additions to services occur, such additions become not a part of a generalized system but a part of hospital insurance and controlled by the agencies of hospital insurance.

Another significant development in this country is reported in the *New York Times* of March 16. The story dealt with the annual meeting of the advisory council of the Milbank Memorial Fund. At this meeting a plan for state controlled compulsory health insurance was presented and discussed. Those

present included Mayor LaGuardia and Harry L. Hopkins, Federal Relief Administrator. To quote from the *Times*

"The plan," Dr. Miller said, "provides for local differences of ability to pay and for the availability of medical facilities by dividing the services into two classes. The first includes those which should be mandatory for the entire state. It would include home and office care by physicians, prescribed drugs and medicines, hospital care where the institutions are available, and maternity benefits for women who remain under continuous prenatal supervision.

"The second class includes those which are permissive and which may be established in local areas, with the approval of the proper authority, when the extension is desired by the local area, when the costs can be financed, and when the competent personnel and facilities are available. This would include specialist services, dentistry, the clinic and the laboratory, home nursing, etc."

* * *

"You aren't going to get health insurance," Mr. Hopkins said, "if you expect people to do it voluntarily. I am convinced that by one bold stroke we could carry the American people along not only for health insurance but also for unemployment insurance. I think it could be done in the next eighteen months."

Whatever may come as a result of the above advocacy, your Committee views Mutual Health Service as the organization with which state or other authorities must deal. The history of compulsory health insurance is a history of disastrous results to the professions because of a lack of unity. It is a history of an organized group dealing with disorganized professional units or with individuals.

A third development in the United States is the drive toward unemployment insurance. Among medical leaders there is a too general apathy toward this movement. If unemployment insurance becomes both widespread and inclusive, your Committee feels that thought must be given by the professions to two items: first, the setting aside of a percentage of unemployment insurance funds to provide medical care for the unemployed, and, second, the question of unemployment by reason of physical disability.

Out of the second item it is not improbable that methods may be developed for the care of physically unemployable people so that they may again become employable. The history of Workmen's Compensation shows that the profession gave little or no thought to its medical aspects. In this connection the following quotation from the report of the Committee on Legislation and Public Policies in *The Journal of the Michigan State Medical Society* for March, 1912, will be of interest:

'True we have had two sessions called by the Governor to consider special and specific subjects yet at these sessions nothing of a medical or public health nature was considered. Nothing at these

sessions could be legally or constitutionally considered other than those recommended from time to time by special message from the Governor to the Legislature. Therefore, if any amendments to our medical laws are to be made they must be made during the next regular session of the Legislature which will convene January, 1913."

It was at one of the special sessions where "nothing of a medical or public health nature was considered" that Michigan adopted the law for Workmen's Compensation. Your Committee presents this item for whatever may be its value in focusing attention upon unemployment insurance.

As reported to the House of Delegates at its last meeting, the California legislature has appointed a commission to study health insurance and report in January, 1935. No further information concerning the activities of the commission is available. The whole subject, however, is on the program of the Western Hospital Association meeting in Sacramento, California, this week, and also at a meeting to be held before the Commonwealth Club in San Francisco on Friday.

Recently the Committee on Medical Economics of the Colorado State Medical Society published a report advocating the application of the principle of health insurance. To quote from this report:

"The point at issue is not the insurance principle but how to use it.

"We are not unmindful of the opposition of the A. M. A. to the general plan of insurance medicine, especially as operated by European governments or by corporations for profit, nor unmindful of the deteriorations accompanying contract practice regardless of how disguised. The plan referred to is not in the opposed classes because it does not restrict opportunity to practice, nor free choice of physician, is on a non profit basis and under the control and management of the profession. This places the responsibility where it belongs. All of us have looked to the A. M. A. for help. Thus far we have been disappointed."

An interesting booklet has been received recently by your Committee. It contains the platform and principles of the Medical League for Socialized Medicine, an organization with headquarters in Brooklyn and with a membership of over 500 physicians. This organization is unequivocally committed to the principle of salaried physicians providing service under the state.

These are a few of the evidences of the turmoil in medical economics. It is for its quieting and beneficial influence that your Committee has recommended that the plan of Mutual Health Service be widely publicized.

RESOLUTION OF APPROVAL

Whereas, the House of Delegates of the Michigan State Medical Society, at its meeting on July 12 1933, directed the Committee on Medical Economics to prepare and present for consideration of

the House a plan or plans for health insurance, and
Whereas, the House of Delegates adopted the policies for the guidance of its Committee on Medical Economics
and

Whereas, the plan for Mutual Health Service presented by the Committee on Medical Economics is in accord with the above policies therefore, be it

Resolved that the House of Delegates of the Michigan State Medical Society approves the general principles of the plan for Mutual Health Service, and directs the Committee on Medical Economics to undertake the following efforts

- a The discussion of the plan with employers and employees
- b The determination of the legal status of the Mutual Health Service, and the necessary legal action for the organization of Mutual Health Service
- c Preparation of the final detail plan of the Mutual Health Service and its presentation to the House of Delegates for final action,

and be it further

Resolved, that the plan for Mutual Health Service shall not be inaugurated in any county without the approval of the county and state medical society

AN HONOR TO DR GEORGE GILBERT SMITH

At the meeting of the American Urological Association, held at Atlantic City, May 25, Dr George Gilbert Smith of Boston was elected president. Dr Smith is a member of the staff of the Massachusetts General Hospital, Department of Urology

CORRESPONDENCE

The Massachusetts Medical Society

POSTGRADUATE INSTRUCTION

May 26, 1934

Editor, *New England Journal of Medicine*,

On May 15, 1934 the Massachusetts Medical Society's first year of organized postgraduate extension courses came to a close. One thousand and two Fellows were enrolled which may be considered a successful beginning. The Executive Committee has prepared a report of the year's work which will be submitted to the Council on June 5.

Some comments by those who took the course may be of interest

- 1) "Looking forward to next year's lectures"
- 2) "I want practical everyday talk, not too many statistics"
- 3) Course worth while. All members of Massachusetts Medical Society should be compelled to take this course"
- 4) Suggest an outline of year's lectures be mailed each doctor in advance"

- 5) "I believe the course was too elementary"
- 6) "Most excellent undertaking and would greatly appreciate more"
- 7) "Well worth while. Valuable and stimulating as such things always are when given by good men."
- 8) "The choice of speakers was happy—men who were practical rather than didactic"
- 9) "Make them more useful and practical for the family physician"
- 10) "I favor more questions, some of the points that helped me most were unearthed by questions"
- 11) "In my opinion postgraduate teaching does not mean reading papers. Each instructor should come with his subject prepared so that he can stand up and give it without notes or with notes. I feel that the instructor should not attempt to cover too much ground"
- 12) "I think the courses were too general, would prefer more details of diagnosis and treatment"
- 13) From a district chairman "First, in my opinion this was one of the finest courses ever afforded to the physicians in our County, and I am convinced from many remarks made to me from the majority of the men, and from men whose opinions I value most, that the course was appreciated and will be looked forward to in the years to come. I am sure next year we will have a much larger turnout."
- 14) From another district chairman "The talks have been very excellent in every way and have been much enjoyed by all of the men and they feel that it is one of the best things that the Massachusetts Medical Society in association with the District Societies has ever put over. It has done much to bring the men together, and to promote harmony and good fellowship, and this is a very important thing in any community undertaking. The local men have tried to express their appreciation in various ways for the efforts that have been made by the different speakers in making such long trips to carry out this program"

The following letter from a Rhode Island doctor who took the course at Fall River is of interest

"I had the opportunity to attend the lectures sponsored by the Massachusetts Medical Society on specialized medical subjects, given at Fall River. I take this occasion for congratulating the Society for such a step forward

"All the lecturers were very interesting and they all presented their respective subjects in such a way that the important facts were emphasized. I need not say any more because these physicians are already known.

"I sincerely hope that this will become a tradition, and that next year we shall again enjoy the same privilege of being taught the best things by the best men."

The program for next year will be published before the autumn. Anyone interested in special subjects should consult his district chairman on postgraduate instruction. The final report will be posted in the exhibit space at the Worcester Convention.

Sincerely yours,

LEROY E PARKINS, M.D., *Secretary*,
Executive Committee
on Postgraduate Instruction

THE NECESSITY FOR THE JUDICIOUS USE OF ARTIFICIAL PNEUMOTHORAX

May 24, 1934

Editor, *New England Journal of Medicine*

In the *Journal* of May 17, 1934 Drs Walter C Bailey and Bayard T Crane of the Central New England Sanatorium called attention to the physicians of New England that they will accept cases of early tuberculosis for deflation treatment without cost of any kind to the patient. They propose to keep these patients at the sanatorium for ten days or two weeks and then return them to the family physician for refills and further care. By deflation I suppose they mean artificial pneumothorax treatment and in this way suggest that pneumothorax treatment should become the universal practice of every family physician. They do not mention any period of observation prior to instituting pneumothorax and infer that every patient should be ready to go back to his or her home after a brief stay of ten days or two weeks.

Those of us who have had some experience in the treatment of pulmonary tuberculosis do not as yet feel that collapse therapy should be used in every instance. Artificial pneumothorax is only one form of collapse therapy. A goodly number of patients if found in the early stages will do well on sanatorium régime alone. They make no mention of selecting patients, but will abide by the family physician's order for pneumothorax treatment. As yet I feel that collapse treatment is only an adjunct, to be sure a very important one, to the general treatment, and should be distinctly in the hands of those who are experienced in the general treatment of tuberculosis.

While the technical part of this treatment is a simple one, untold damage may be done by its in judicious use. The problem of the effectiveness of this treatment is a very serious one. The question of dosage is of extreme importance, and the

question also of intervals is a very serious one to decide. Then there are always complications to treat, such as effusions.

The mere compression of the lung does not necessarily mean that the affected lesion has been well taken care of, adhesions frequently preventing a good collapse. Other forms of collapse therapy, if pneumothorax treatment fails, must be considered. A shifting mediastinum may also become a very irksome problem, the whole lung may simply be pushed over rather than compressed. Frequent fluoroscopic examinations before and after refills are of the greatest importance. The technical procedure itself is not without its real dangers. Lungs have been punctured and air emboli may occur. The length of treatment is a very delicate and a very important problem. Space will not allow enumeration of the many factors that will make for the success or failure in the treatment of pulmonary tuberculosis.

It has been a hard battle to bring the profession to the realization of the importance of collapse therapy in pulmonary tuberculosis. Let us not go too far now and destroy a method of treatment which has been a real blessing to the tuberculous patient by its injudicious, untrained and inexperienced use.

Sincerely yours

MOSES J STONE, M.D.

FELLOWSHIPS AT THE HARVARD MEDICAL SCHOOL

To the Editor

The Commonwealth Fund of New York has added a course in office surgery to the list of subjects which are available for fellowships at the Harvard Medical School, Courses for Graduates. This course is designed for physicians who are engaged in general practice. The subjects studied will be surgical problems met in office practice. The course is for one month.

The other courses for which fellowships are available are medicine, obstetrics and pediatrics. Fellowships are for one to four months. The stipend is two hundred and fifty dollars per month plus tuition and traveling expenses from place of residence to Boston and return.

An applicant for a fellowship must be a graduate of a grade A medical school, a member of the Massachusetts Medical Society, in good standing, must have been in practice at least five years, should be between thirty and fifty years of age, and resident of a town of under ten thousand population.

Application blanks may be obtained from the Commonwealth Fund, 41 East 57th Street, New York City or from the Courses for Graduates, Harvard Medical School, 25 Shattuck Street, Boston.

Sincerely yours

LEROY E PARKINS, M.D.,
*Secretary to Courses for Graduates
under the Commonwealth Fund.*

RECENT DEATHS

SMITH—JOSEPH ANDREW SMITH, M D of 584 Cambridge Street, Worcester, Massachusetts, with an office at 476 Main Street, died in that city, April 16 1934. He was born in Worcester in 1875 and was educated at the Worcester public schools, Holy Cross College and the Philadelphia College of Dental Surgery. His M D degree was conferred by the College of Physicians and Surgeons of Boston in 1914. His hospital training included two and a half years in the outpatient department of the Boston City Hospital. He joined the Massachusetts Medical Society in 1920, and specialized in oral surgery.

He served as police surgeon for several years and had an extended military service, first as an enlisted private in the Spanish American War, and was assigned to Fort McPherson Georgia. Camp Hobson Georgia and Plattsburg New York. On returning to Worcester he was appointed as paymaster of the First Battalion M V N, with the rank of lieutenant and later promoted to that of captain and retired from service with the rank of major. He was very much interested in the Boy Scouts and Red Cross activities, and was prominent in politics. He served on the Worcester school board. He was a member of Alhambra Council K. of C., the Eagles Division 25 A O H E R Shumway Camp United States War Veterans the Economic Club, McCafferty Court M C O F the Electric Medical Society the Worcester District Dental Society and was a founder of the St. Vincent de Paul Society of Sacred Heart Church.

He is survived by his widow Mrs Mary J (Dunn) Smith and three children Mary Joseph and Lewis A. two brothers, Rev Thomas P Smith of Blackstone and Rev William F Smith of Oakdale and a sister, Miss Julia Smith of Worcester.

HILL—GEORGE HILLARD HILL, M.D., of 15 High Street Worcester, Massachusetts died in that city May 18 1934 after an illness of several months terminating in pneumonia. He was born in Worcester in 1868 the son of J Henry Hill and Sarah Bruce (Jenkins) Hill. He was educated in Kings private school Leicester Academy and graduated from the Harvard Medical School in 1894. He first practiced in Millis and moved to Worcester in 1897. He served on the staffs of the Memorial and the Worcester City Hospitals but resigned from hospital service several years ago devoting much of his time to the duties of surgeon to the Worcester Fire Department reporting at all fires even at times when his health had become seriously impaired.

He joined the Massachusetts Medical Society in 1896 and the American Medical Association the same year. He was a Fellow of the American College of Surgeons, and a member of the Harvard Club of Worcester Devens Post A. L. the Leicester Golf Club, and Cohasset Golf Club of Southbridge.

He is survived by his widow Grace R E (El

Hott) Hill, and three nephews, Southworth Lancaster Bruce Lancaster, and Eveleth D Hill all of Worcester.

NEWTON—EDWARD ROSWELL NEWTON, M D of Brookline, Massachusetts, with an office at 419 Boylston Street, Boston, died at his home, May 19, 1934 after a long illness. He was born in Hartford, Connecticut, in 1874 and graduated in medicine from the Harvard Medical School in 1898. After post-graduate studies in Berlin, Vienna and Paris in diseases of the nose, throat, and ear, he practiced in Boston.

During the World War he served in the United States Navy and practiced his specialty.

He joined the Massachusetts Medical Society in 1914. He was a Fellow of the American Medical Association and a member of the American Otological Society. He is survived by his widow, Mrs Mabelle M (Field) Newton, three brothers and two sisters.

DENIG—BLANCHE A. DENIG, M.D. formerly of Boston, and lately living at Oakland California died recently.

She was born in Columbus, Ohio. While in Boston she had offices at 541 Boylston Street, and was a member of the staff of the New England Hospital for Women and Children.

OSTROM—HJALMAR OSTROM, M.D. of Quincy Massachusetts, with an office at 419 Boylston Street, Boston died at the New England Baptist Hospital, May 24 1934.

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THE NECESSITY FOR THE JUDICIOUS USE OF ARTIFICIAL PNEUMOTHORAX

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Those of us who have had some experience in the treatment of pulmonary tuberculosis do not as yet feel that collapse therapy should be used in every instance. Artificial pneumothorax is only one form of collapse therapy. A goodly number of patients if found in the early stages will do well on sanatorium régime alone. They make no mention of selecting patients but will abide by the family physician's order for pneumothorax treatment. As yet I feel that collapse treatment is only an adjunct, to be sure a very important one to the general treatment, and should be distinctly in the hands of those who are experienced in the general treatment of tuberculosis.

While the technical part of this treatment is a simple one, untold damage may be done by its injudicious use. The problem of the effectiveness of this treatment is a very serious one. The question of dosage is of extreme importance, and the

question also of intervals is a very serious one to decide. Then there are always complications to treat, such as effusions.

The mere compression of the lung does not necessarily mean that the affected lesion has been well taken care of, adhesions frequently preventing a good collapse. Other forms of collapse therapy, if pneumothorax treatment fails, must be considered. A shifting mediastinum may also become a very irksome problem; the whole lung may simply be pushed over rather than compressed. Frequent fluoroscopic examinations before and after refills are of the greatest importance. The technical procedure itself is not without its real dangers. Lungs have been punctured and air emboli may occur. The length of treatment is a very delicate and a very important problem. Space will not allow enumeration of the many factors that will make for the success or failure in the treatment of pulmonary tuberculosis.

It has been a hard battle to bring the profession to the realization of the importance of collapse therapy in pulmonary tuberculosis. Let us not go too far now and destroy a method of treatment which has been a real blessing to the tuberculous patient by its injudicious, untrained and inexperienced use.

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He served as police surgeon for several years and had an extended military service first as an enlisted private in the Spanish American War and was assigned to Fort McPherson, Georgia, Camp Hobson, Georgia, and Plattsburg, New York. On returning to Worcester he was appointed as paymaster of the First Battalion M. V. M. with the rank of lieutenant and later promoted to that of captain and retired from service with the rank of major. He was very much interested in the Boy Scouts and Red Cross activities, and was prominent in politics. He served on the Worcester school board. He was a member of Alhambra Council K. of C., the Eagles Division 25, A. O. H. E. R., Shumway Camp, United States War Veterans, the Economic Club, McCafferty Court, U. C. O. F., the Electric Medical Society, the Worcester District Dental Society and was a founder of the St. Vincent de Paul Society of Sacred Heart Church.

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gree of Ph.B., and received his M.D. degree from Columbia University College of Physicians and Surgeons in 1903. He practiced in Brockton, Massachusetts, for several years, later settling in Boston where he specialized in otology, laryngology and rhinology, and was formerly an instructor in otology at the Harvard Medical School, and associate surgeon at the Massachusetts Eye and Ear Infirmary, and associate surgeon at the Massachusetts General Hospital. He served as corporal in the Spanish American War, and was a member of the medical advisory board during the World War.

He joined the Massachusetts Medical Society in 1905, and was a Fellow of the American Medical Association, a Fellow of the American Board of Otolaryngology, and a member of the New England Otological, Laryngological and Rhinological Society.

He belonged to the Commercial Club, the University Club, the Thorney Lean Golf Club of Brockton, and the Harvard Club. He was prominent in the Masonic fraternity and the Knights of Pythias.

Dr. Simmons is survived by his widow, Mrs. Geneva (Cobb) Simmons, one son, Dr. Fred A. Simmons, Jr., two brothers, Louis A. Simmons, of North Adams, and Arthur C. Simmons of Adams, and a sister, Miss Edith M. Simmons, of Adams.

NOTICES

The Massachusetts Medical Society

ANNUAL MEETING

PROGRAM FOR THE ENTERTAINMENT OF THE VISITING WOMEN

Monday, June 4

9 A.M. to 12 M. The local women's committee will be at the Hotel Bancroft to welcome and assist the visitors.

12 M. A bus will take visitors to the following:
The Library of the American Antiquarian Society

Tatnuck Country Club for luncheon at one o'clock.

The J. W. Higgins Armory Museum
The Worcester Art Museum

The Worcester Club for tea about 4:30

8 P.M. The Shattuck Lecture Hotel Bancroft, Worcester

Tuesday, June 5

9 A.M. to 12 M. The local women's committee will be in the hotel lobby to welcome and assist the visitors.

12 M. A bus will take visitors to the following:
The Worcester Memorial Auditorium
The Worcester Country Club for luncheon at one-thirty o'clock.

The gardens of Mrs. Homer Gage in Shrewsbury at about three o'clock.

7 P.M. The Annual Dinner

The galleries of the ballroom have been reserved for ladies who wish to hear the distinguished after dinner speakers.

REMOVAL

M. A. WEINGER, M.D., announces the removal of his office from 371 Commonwealth Avenue to 395 Commonwealth Avenue, Boston.

REPORTS AND NOTICES OF MEETINGS

OFFICERS OF THE NEW ENGLAND PHYSICAL THERAPY SOCIETY

At the annual meeting of the New England Physical Therapy Society held May 16, 1934, the following officers were elected: Dr. Charles W. McClure of Boston, president, Dr. George B. Carr of Lynn, and Dr. George B. Rice of Boston, vice-presidents, Dr. Arthur H. Ring of Arlington, secretary, Dr. Franklin P. Lowry of Newton, treasurer.

The councillors are, for three years, Dr. William G. Curtis, Wollaston, and Dr. DeWitt G. Wilcox, Newton, for two years, Dr. John L. O'Toole, Haverhill, and Dr. Solon Abbott, Franklin, for one year, Dr. William D. McFee, Boston, and Dr. John F. Valentine, Danvers.

Dr. William L. Clark, Philadelphia, was elected to Honorary Membership in the Society.

MASSACHUSETTS SOCIETY OF EXAMINING PHYSICIANS

At the meeting of the Massachusetts Society of Examining Physicians, May 23, 1934, Dr. J. E. Goldthwait delivered an address under the title of "Chronic Invalidism Due to Joint Pathology." The discussion was opened by Dr. Howard Thompson who spoke on the medical aspects of the subject. He was followed by Dr. Carl Watson who presented the osteopathic point of view.

The officers elected for the ensuing year are:

Dr. Frederick W. O'Brien of Boston, president, Dr. George H. R. Gosman of Waban, Dr. James R. Knowles, and Dr. Bernard A. Godwin of Boston, vice-presidents, Dr. William Pearce Coues of Brookline, secretary, and Dr. Robert C. Gwin of Brookline, treasurer. The following were elected councillors: Dr. Francis R. Mahony of Lowell, Dr. John W. McNamara of Brockton, and Drs. Arl W. George, William F. Cotting, Samuel Tartakoff, Michael E. McGarty, George W. Morse, all of Boston.

THE ANNUAL MEETING OF THE NATIONAL TUBERCULOSIS ASSOCIATION

Seven hundred and sixty-six persons from all parts of the country registered at the Thirtieth Annual Meeting of the National Tuberculosis Association.

held at Hotel Netherland Plaza in Cincinnati, Ohio, on May 14, 15, 16, and 17

The American Sanatorium Association and the National Conference of Tuberculosis Secretaries also met at the same place on Monday, May 14

Those in attendance from Massachusetts included Dr Henry D Chadwick, State Commissioner of Public Health Dr Sumner H Remick, Superintendent, Middlesex County Sanatorium, Dr Edson W Glidden, Superintendent, Worcester County Sanatorium Dr Olin S Pettingill, Superintendent Essex County Sanatorium, Miss Ida Cannon, Chief Social Service Department, Massachusetts General Hospital, Dr John B Hawes, 2nd, President, Boston Tuberculosis Association, Miss Jean V Latimer, Educational Secretary, and Frank Kiernan, Executive Secretary, Massachusetts Tuberculosis League

Dr John B Hawes, 2nd gave a paper in the Clinical Section on "Dust and Its Relation to Tuberculosis" Dr Henry D Chadwick was called upon to comment on papers in the Clinical, Pathological and Sociological Sections Miss Jean V Latimer spoke at the Health Education Meeting of Tuberculosis Secretaries Mr Frank Kiernan, who was Chairman of the Sociological Section, presided at the sessions on Tuesday and Thursday and also spoke on the program of the National Conference of Tuberculosis Secretaries

Dr H Kennon Dunham of Cincinnati, Ohio, was elected President of the National Tuberculosis Association for 1934-35, Dr Edward S McSweeney of New York was elected President of the American Sanatorium Association, and Mr Ernest D Easton of Newark, New Jersey, was elected President of the National Conference of Tuberculosis Secretaries All three organizations will come together again in June, 1935, for their Annual Meetings at Saranac Lake, New York

NEW ENGLAND PHYSICAL THERAPY SOCIETY

The June meeting of the New England Physical Therapy Society will be held at the Hotel Bancroft Worcester, in conjunction with the program of the Section of Radiology and Physical Therapy of the Massachusetts Medical Society at 2 P M on Monday, June 4

This will be the final gathering of the year All members of our Society should make an effort to be present.

ARTHUR H. RING, M D, *Secretary*

BOSTON SOCIETY OF ANESTHETISTS

The next meeting of the Boston Society of Anesthetists will be held in the Hotel Kenmore on Tuesday, June 12

The program

6 30—Dinner, main dining room

7 45—Business meeting, Colonial Room

8 00—Scientific program, Colonial Room Dr Will Sentman Taylor, professor of psychology at Smith

College, will talk on "Hypnotism Its Relation to General Medicine and to Anesthesia," and will induce hypnosis in a subject.

Physicians and medical students are invited

PHILIP D WOODBRIDGE, M D, *President*

SOUTH END MEDICAL CLUB

The next regular meeting of the South End Medical Club will be held at the office of the Boston Tuberculosis Association, 554 Columbus Avenue, Boston, on Tuesday, June 12, 1934, at 12 noon This is the *second Tuesday* of June The meeting is being held at this time because the third week in June is Commencement Week, and it would be impossible for many to attend The speaker, June 12, will be Dr Tracy B Mallory, Instructor in Pathology at Harvard Medical School Chief of the Laboratory of Pathology and Bacteriology at the Massachusetts General Hospital His subject will be "The Pathology of Bronchial Asthma." All physicians are cordially invited to attend both lecture and luncheon

FAULKNER HOSPITAL CLINICAL MEETING

The final clinical meeting of the season will be held on Thursday, June 7, at 5 00 P M, at the hospital In addition to the usual clinical pathological conference Dr Edward L Young, Jr, who was scheduled to speak at the April meeting but was unable to do so will discuss "Some of the Difficulties of Gallbladder Diagnosis" All physicians who are interested are cordially invited

SOCIETY MEETINGS, CONGRESSES AND CONFERENCES

May 31—New England Medical Society will meet in the Evans Auditorium of the Massachusetts Memorial Hospitals 80 East Concord Street Boston at 8 15 P M

May 31 June 2—American Association for Thoracic Surgery A program of papers on thoracic surgery and allied subjects will be given on Thursday and Friday in Building C Amphitheatre at the Harvard Medical School On Saturday morning programs will be provided at the Massachusetts General Hospital the Peter Bent Brigham Hospital and the New England Deaconess Hospital on thoracic disease

June 4—New England Physical Therapy Society See notice elsewhere on this page

June 4—Worcester City Hospital Clinics See page 1137 issue of May 24

June 4—St. Vincent Hospital (Worcester) Clinics See page 1137 issue of May 24

June 5—Alumni Luncheon Massachusetts Alumni of the University of Maryland Medical School Baltimore Medical College College of Physicians and Surgeons Baltimore to be held at the Hotel Bancroft Worcester at 12 30 P M Reservations should be made through Dr W B Davidson (1917) 36 Pleasant Street Worcester

June 7—Faulkner Hospital Clinical Meeting See notice above

June 7, 8, 9—Annual Meeting of the American Association for the Study of Goltz will be held in Cleveland, Ohio For details of the program apply to Dr J R. Yung Terre Haute Ind

June 11—American Medical Golfing Association will meet at the Mayfield Country Club in Cleveland. For details see page 1090 issue of May 17

June 11 12—The American Proctologic Society will meet at the Hotel Cleveland Cleveland For information address the Secretary Frank G Runyon M D 1361 Perikomen Avenue Reading Pa

June 12—South End Medical Club See notice above

June 12—Boston Society of Anesthetists See page 1195

June 12—American Heart Association will meet at 9 30 A.M. at the Cleveland Hotel Cleveland, Ohio

July 24 31—The IVth International Congress of Radiology will be held in Zurich under the presidency of Professor H. R. Schnitz General Secretary Dr H. E. Walther, Gloriastrasse 14 Zurich

August 18 September 30—Medical Study Trip to Hungary See page 975 issue of May 10

September 3 6—American Public Health Association at Pasadena, California. Dr J. D. Dunshee, Chairman, Local Committee on Arrangements

September 4, 5, 6—International Union Against Tuberculosis. For information address the National Tuberculosis Association, 450 Seventh Avenue New York City

BOOKS RECEIVED FOR REVIEW

You Must Relax By Edmund Jacobson 201 pp New York McGraw-Hill Book Company \$1.50

Medicine A Voyage of Discovery By Josef Löbel 334 pp New York Farrar & Rinehart, Inc \$3.00

Japanese Medicine By Y. Fujikawa Translated from the German by John Ruhräh 114 pp New York Paul B. Hoeber, Inc \$1.50

Survey of Public Health Nursing Administration and Practice By the National Organization for Public Health Nursing 262 pp New York The Commonwealth Fund \$2.00

The Hospital Manual of Operation By Warren P. Morrill 305 pp New York Lakeside Publishing Company \$3.00

Brucella Infections in Animals and Man Methods of laboratory diagnosis By I. Forest Huddleson 108 pp New York The Commonwealth Fund

Surgical Clinics of North America April, 1934 Volume 14—Number 2 New York Number 520 pp Philadelphia and London W. B. Saunders Company

Acute Intestinal Obstruction By Monroe A. McIver 430 pp New York Paul B. Hoeber, Inc \$7.50

The Road to Adolescence By Joseph Garland 293 pp Cambridge Harvard University Press \$2.50

Diseases of the Skin For the use of students and practitioners By Oliver S. Ormsby Fourth Edition thoroughly revised 1288 pp Philadelphia Lea & Febiger \$11.50

Modern Drug Encyclopedia and Therapeutic Guide By Jacob Gutman 1393 pp New York Paul B. Hoeber, Inc \$7.50

One Hundred and Twentieth Annual Report of the Trustees of the Massachusetts General Hospital, including the General Hospital in Boston and the McLean Hospital in Waverley 1933

BOOK REVIEWS

External Diseases of the Eye By Donald T. Atkinson 704 pp Philadelphia Lea & Febiger \$7.00

Atkinson's *External Diseases of the Eye* a book of 674 pages and ample index, abundantly illustrated with 479 engravings will appeal to the general prac-

titioner who must refresh his memory about diseases which affect the anterior segment of the eyeball, and acquaint himself with the methods of treatment employed

Well taught and recent medical graduates will be disappointed to find so little about the bacteriology and histopathology of ocular lesions, about the valuable diagnostic information obtained from the anterior segment with the use of the corneal microscope and slit lamp, and about the supreme value of careful perimetry in following the progress of glaucoma of all sorts. The excellent arrangement of the subject matter, and the abundance of illustrations will make the book a useful one for orientation of the general practitioner

Hygiene of the Mind By Baron Ernst von Feuchtersleben Translated from the German by F. C. Sumner 150 pp New York The Macmillan Company \$1.25

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VOLUME 210

JUNE 7, 1934

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The Massachusetts Medical Society

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BY LINCOLN DAVIS, M D †

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A perusal of the delightful address of Dr. Thomas N. Stone of Wellfleet delivered in 1872 shows that the attitude of the profession toward our Legislature has not greatly changed in fifty years. "Every year", he said, "witnesses the birth of some new theory in medicine, some grand discovery in the laws of Nature, who in her old age seems as prolific of law as a Massachusetts Legislature." Speaking of the stern granitic ideas of the Puritan fathers he said, "They could in theology stand strong doctrine to the seventeenthly of a three hours sermon. In pathology they could bear bleeding, sweating and purging, in as large doses and as oft repeated. The beloved youth of whom Jefferson was wont to tell who died of a decline notwithstanding his attentive physician had bled him twenty six times was an effeminate son of the F's of Virginia, not a sturdy scion of the old Puritan stock."

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*The Annual Discourse delivered at the Annual Meeting of the Massachusetts Medical Society Worcester June 6 1934

†Davis—President Boston Medical Library. For record and address of author see "This Week's Issue" page 1*34

June 12—Boston Society of Anesthetists See page 1195

June 12—American Heart Association will meet at 9 30 A.M. at the Cleveland Hotel Cleveland Ohio

July 24 31—The IVth International Congress of Radiology will be held in Zurich under the presidency of Professor H. R. Schnitz General Secretary Dr H. E. Walther Gloriastrasse 14 Zurich.

August 18 September 30—Medical Study Trip to Hungary See page 975 issue of May 10

September 3 6—American Public Health Association at Pasadena, California. Dr J D Dunshee, Chairman, Local Committee on Arrangements

September 4, 5, 6—International Union Against Tuberculosis For information address the National Tuberculosis Association, 450 Seventh Avenue, New York City

BOOKS RECEIVED FOR REVIEW

You Must Relax By Edmond Jacobson 201 pp New York McGraw Hill Book Company \$1.50

Medicine A Voyage of Discovery By Josef Löbel 334 pp New York Farrar & Rinehart, Inc \$3.00

Japanese Medicine By Y Fujikawa Translated from the German by John Ruhräh 114 pp New York Paul B Hoeber, Inc \$1.50

Survey of Public Health Nursing Administration and Practice By the National Organization for Public Health Nursing 262 pp New York The Commonwealth Fund \$2.00

The Hospital Manual of Operation By Warren P Morrill 305 pp New York Lakeside Publishing Company \$3.00

Brucella Infections in Animals and Man Methods of laboratory diagnosis By I Forest Huddleson 108 pp New York The Commonwealth Fund

Surgical Clinics of North America April, 1934 Volume 14—Number 2 New York Number 520 pp Philadelphia and London W B Saunders Company

Acute Intestinal Obstruction By Monroe A McIver 430 pp New York Paul B Hoeber, Inc \$7.50

The Road to Adolescence By Joseph Garland 293 pp Cambridge Harvard University Press \$2.50

Diseases of the Skin For the use of students and practitioners By Oliver S Ormsby Fourth Edition, thoroughly revised 1288 pp Philadelphia Lea & Febiger \$11.50

Modern Drug Encyclopedia and Therapeutic Guide By Jacob Gutman 1393 pp New York Paul B Hoeber, Inc \$7.50

One Hundred and Twentieth Annual Report of the Trustees of the Massachusetts General Hospital, including the General Hospital in Boston and the McLean Hospital in Waverley 1933

BOOK REVIEWS

External Diseases of the Eye By Donald T Atkinson 704 pp Philadelphia Lea & Febiger \$7.00

Atkinson's External Diseases of the Eye a book of 674 pages and ample index, abundantly illustrated with 479 engravings will appeal to the general prac-

titioner who must refresh his memory about diseases which affect the anterior segment of the eyeball, and acquaint himself with the methods of treatment employed.

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may it have been so, for the progress has been truly remarkable. In some cases, dazzled by the brilliant achievements of their age, speakers have been lured into expressions of conviction that the ultimate had been reached. How often have such conclusions been confounded in the light of history!

The very pinnacle of medical progress would seem to have been attained in 1817 when the author of the Annual Discourse of that year in speaking of modern physiologists said, "They have so minutely investigated, and so perspicuously illustrated every topic connected with their profession that all pretensions to originality, and every claim to novelty are denied to their successors."

Dr Josiah Bartlett in his address of 1810 said, "It has been remarked that more professional knowledge is at this time attainable in a single season, than was known to Hippocrates, Galen and their successors till the beginning of the eighteenth century. A case of fistula in ano, now considered as a simple disease, and often cured by our youngest practitioners, was in 1686, nearly seventy years after the settlement of Massachusetts so formidable and dangerous, that Felix a surgeon and Fagon a consulting physician were rewarded with forty thousand dollars for a successful operation on Lewis the Fourteenth of France, in consequence of which a national thanksgiving was religiously observed." This passage might seem to indicate a retrogressive rather than a progressive trend not only in pecuniary rewards since 1686, but also in the surgical treatment of fistula in ano since 1810.

That medical progress should be measured not solely by an enumeration of the obstacles overcome but by a survey of the advancement toward definite objectives, was emphasized by Dr George C. Shattuck the second, who said in 1866 "no one can deny or doubt that we have made and are making great advances, but the horizon opens before us as we go on, and the extent of the field becomes even more apparent than our progress."

For a graphic illustration of this same point of view I must again turn to Oliver Wendell Holmes. He said, "Sir Edward Parry and his party were going straight towards the pole, in one of their Arctic expeditions, travelling at the rate of ten miles a day. But the ice over which they travelled was drifting straight towards the equator at the rate of twelve miles a day, and yet no man among them would have known that he was travelling two miles a day backward, unless he had lifted his eyes from the track in which he was plodding."

* * * *

With these warnings fresh in mind I will venture a few guarded comments on the alluring

subject of medical progress since the days of our forefathers.

A striking feature of Colonial medicine was the participation by the clergy in the care of the sick. As Dr Henry Viets tells us in his History of Medicine in Massachusetts, "the ministers were expert in phlebotomy, and they were wont to bleed and pray in all severe cases." This was merely the cropping out in America of the very widespread association of religion with the healing art which has prevailed in all primitive cultures. The early Greek temple medicine, the Asclepieia, exemplified this trait. It flourished in Egypt in still earlier times. In Europe in the Middle Ages the monasteries preceded the hospitals in the care of the sick.

Since then specialization in medicine has carried us very far indeed from this primitive blending of the functions of two related professions, so far in fact that there are now distinct signs above the horizon of the completion of a cycle with return to a recognition of the mutual benefits of peace of mind and of body. Dr Walter Cannon in his Discourse of 1928, emphasizing the emotional elements in disease, laid a scientific foundation for the participation by the regular profession in a field which had hitherto been largely abandoned both by the medical profession and the clergy to faith healers and cultists.

The stoical fortitude displayed by our forefathers in withstanding the three hour sermons, and the bleeding, sweating and purging in corresponding doses so vividly portrayed by Dr Stone was not peculiar to New England. The heroic medical dosage of those Colonial days was merely the transplantation to these shores of the accepted principles of the medical art of the mother country.

The state of medical practice in England at the end of the seventeenth century is well illustrated by the amazing account of the fatal illness of Charles II in "The Mysteries of History" by C. J. S. Thompson. The King was treated by the foremost physicians of England, fourteen in number in constant consultation. The diagnosis was never made, not even at the autopsy. Emetics, purges, clysters, bloodletting from arm and jugular, cupping, blistering of head and feet, scarification, secret elixirs, spirits of human skull and bezoar stones were employed without avail, fifty eight different drugs in all were administered. The unfortunate King finally succumbed after six days, the irony of his famous apology for taking such an unconscionable time a dying seems obvious.

The contrast is striking between the status of medicine of this period and the status of literature and the arts, which had already reached a stage of development which has remained unsurpassed if not unequalled. The physical sci-

ences on the other hand have made amazing progress since those days. Medical science has gone far since the days of Charles II, somewhat of a laggard at first it has within the last half century made prodigious progress. The causal factor of one disease after another has been discovered and in many cases, especially in the bacterial diseases, their control secured. No longer do great epidemic scourges such as plague, smallpox, leprosy, cholera, yellow fever, dysentery, malaria, typhoid, typhus, and diphtheria decimate vast numbers of the people. Of the great infectious epidemics, influenza alone still rages at intervals unchecked through the teeming inhabitants of the civilized world. Equal progress has been made in controlling many of the hitherto obscure constitutional and deficiency diseases, such as diabetes, rickets, pernicious anemia, and scurvy. The triumphs of modern surgery have been even more spectacular, it is unnecessary to rehearse them before this audience. Though we may well be proud of these accomplishments of medical and surgical science in banishing or controlling most of the terrible epidemic diseases of the past and mechanically readjusting many of the derangements of the human frame, the race is still sorely afflicted with ills of body and mind. As one malady is conquered and laid low, another seems to spring up in its place to attack mortal man.

Appendicitis, the pathology of which was first fully elucidated by Reginald Fitz in 1886, has undoubtedly existed from the earliest times. Yet it is only in the modern era that it has become such a factor in morbidity and mortality statistics. Infantile paralysis, which strikes such terror into the hearts of parents to-day, has been traced back to the earliest historical period. In the past it has been obscured by the greater ravages of the more deadly epidemics for it is only after the elimination of the greater terrors that the lesser ones assume important proportions.

Reports of new diseases such as encephalitis lethargica, tularemia, granuloma inguinale, agranulocytic angina, epidermophytosis, etc., appear from time to time in the medical journals. These are probably not new diseases but pathological conditions of long standing which have been recognized and classified for the first time.

It may well be, however, that new bacterial diseases are actually evolving. Why should not bacteria undergo evolution as well as the higher plants and animals? Opportunity for the development of sports and mutations might well occur in organisms of such short life cycle. Kirtley Mather tells us to be sure that in the cliffs of the coast of Wales of the Cambrian period there are fossils of brachiopods indistinguishable in form and structure from their

descendants living to day at the foot of these cliffs after five hundred million years. These, however, are striking exceptions to the well-nigh universal law of organic evolution. Are bacteria like brachiopods, or are there processes of evolution going on whereby these parasites of human woe in their fierce struggle with the medical profession for existence are developing by means of hard shell spores, or invisibility or shrinkage in size, ways of withstanding the autoclave, or eluding the microscope of the bacteriologist and epidemiologist? This is an interesting speculation to which recent investigations of pleo antigenic bacteria seem to lend scientific plausibility. I will venture just one prophecy that the time will never come when there will be an Alexander the Great in medicine with occasion to weep that there are no more diseases to conquer.

* * * *

In the troubled stream of medical progress with its many windings, countercurrents, shoals, rapids and occasional stagnant pools, is it possible to determine the direction of the main trend? There is a confusion of conflicting views and opinions. Dire warnings of impending disaster to the profession have been freely uttered from diverse sources of late.

It was but a short time ago that the word efficiency was upon everybody's lips, efficiency experts were abroad in the land making surveys of every conceivable form of human effort. The medical profession did not escape their scrutiny. Some of the methods of the doctors and hospitals seemed crude, primitive, and wasteful, compared with the smooth working of big industrial establishments. Big business was worshipped as a god in those days. We doctors were told that we must adopt the efficient methods of big business, if we were to survive in the fierce struggle for economic existence.

Hospitals were especially criticized as extravagant in their administration and wasteful of human effort. I have seen, a few years back, an industrial efficiency expert in the operating amphitheatre of one of our large hospitals observing operations. His comments were to the effect that he observed much wasted motion. Doubtless true. No two surgical cases are exactly alike. The vermiform appendix has many hiding places, the sac of a hernia may likewise be exceedingly elusive. Care, patience, and constant vigilance, are the price of safety in operating. It is better to waste motion than blood or life. The avoidance of infection is cheap at the price of infinite pains and seeming fussiness. In other words, there is a vital human element in the relations of the doctor to the patient that cannot be standardized like the laying of bricks or the assembly of automobiles. Fortunately the danger of the adoption of the

factory-belt system in hospitals seems to have passed for the present

There is much to admire and respect in the achievements of the great industrial organizations of America. Their prosperity has meant prosperity for the people and vice versa. Their leaders have been in the main broad-visioned, courageous, progressive, and often extremely philanthropic men. It is perhaps too much to expect them to be primarily altruists or sociologists. I am well aware that much of the medical research, of whose products we are so proud, emanates from foundations established by the generosity of wise leaders of the business world. Our medical schools and hospitals also owe a debt of gratitude to many such enlightened philanthropists. The best results, however, have been obtained in those institutions whose policies have been wisely left to experts in the field and not dictated from outside. Business naturally comes first for business men. Big business is inclined to look upon homo sapiens primarily as a consumer of material goods. With ever-expanding production big business has employed the wiles of the super-salesman and advertiser to force the absorption of an ever-increasing volume of automobiles and apartments, houses and house furnishings, refrigerators and radios, clothes and cosmetics, cigarettes, candies and chewing gum, until the saturation point present and future is attained. Homo and mulier sapientes less sapient than the name implies responded eagerly to the alluring program spread before them, cheerfully mortgaging their goods and their future in the mad pursuit of so-called happiness. Happiness as President Lawrence Lowell has so emphatically stated, contrary to the preamble of the Declaration of Independence, is not to be won by pursuit but is a by-product of earnest endeavor along other lines.

As a result of the orgy of spending and lending, borrowing and mortgaging in the pursuit of false happiness the nation has been brought almost to the verge of ruin. In the train of the financial and social shipwreck there has been an aftermath of mental and physical distress which has had its medical repercussions in worry, ill health, nervous breakdown, insanity and suicide.

To day we hear less of the inefficiency of medicine, there is not so much criticism of the quality of medical care as of its cost. Big business rudely jarred from its former pedestal is fully occupied with its own problems but a host of social economists have come forward raising their voices in a laudable attempt to restore order in a disordered land. In the days of prosperity the cost of medical care was not a pressing problem. To day it has suddenly become a most vital one. It seems evident that

neither organized private charity, nor the charitable service of private physicians, which has so long been a part of the doctors' code, can be reasonably expected to carry the increased load of the indigent sick incident to unemployment and diminished wages on the part of a large proportion of the population. Many and diverse plans have been offered for the solution of this problem. National, state and community medicine, health and sickness insurance, group practice, hospital and university extension and other schemes have been advocated. There are advantages and dangers in these programs, varying local conditions require varying remedies. I have no solution to offer and can only observe that no radical or sweeping immediate change seems either necessary or wise. I agree with those who advocate a policy of carefully observed experimentation on a small scale, modifying methods according to varying conditions in different sections of the country. This is not a policy of "laissez faire", call it trial and error if you like, it is the scientific method, the process by which the medical progress of the past which we have been recording with justifiable pride has been attained. Accurate records of results should lead to an evolutionary development of those means best adapted to the needs. The situation is difficult and complicated. The best medical care depends on a personal relation between doctor and patient based on mutual confidence and harmony which it is difficult to secure in large cooperative efforts. We should be slow to discard the methods which in the past have on the whole given such good results until we are sure that newer ones are better.

Over and over again countless speakers in and out of the profession have emphasized the impending doom of the general practitioner submerged by the rising tide of modern specialization. To some of us on the contrary it has seemed that this very increase of specialism has made the position of the general practitioner all the more necessary. Medical practice has not advanced along a single broad highway. There are many diverging avenues and roads, some blind alleys, many branching paths and unfrequented trails. Signposts to be sure are not lacking along the way, but the multiplicity of conflicting directions bewilders the wandering patient seeking a haven of relief from his ills. If wise he will employ a trustworthy and experienced guide.

An eloquent plea for the family medical adviser was most ably presented by my immediate predecessor in 1933, and I imagine we all agree with him as to the desirability of establishing such a practitioner as he pictured. The prime requisite however, it seems to me, is to make sure of the family to be advised. To

some of us it appears that American family life is showing serious signs of disintegration. The entrance of women into business and industry, the prevalence of divorce, the tendency of human beings to herd together in large cities in monstrous apartments and tenements are all tending to restrict family life in America. The threat to family life is not confined to the United States by any means. It is undergoing its greatest perils at the hands of Soviet experimentation in Russia, the results of which are awaited with interest by the other nations of the globe. From the earliest period of recorded history and before, the family has been the foundation of human society. To be sure there have been cultures scattered among primitive peoples founded on other bases, such as promiscuity and group marriage, but the peoples that have showed progress and made history have without exception maintained the family relation. Is the present concern about the preservation of the family occasioned merely by a trifling and temporary oscillation in the broad onward sweep of civilization, or is there a distinct deviation of trend from the broad pathway of the past? Who can tell?

Dr. W. M. Wheeler in a recent symposium on "Biological and Society" before the American Society for the Advancement of Science contrasted the societies of termites and hymenoptera with vertebrate and mammalian societies, the former being characterized by a communal association marked by harmony and cooperation and dominated by female leadership. Vertebrate and mammalian societies, and included in these is human society, have been harassed by what he calls the "problem of the male." Male leadership has resulted in strife, disharmony and constant change and hence progress. The hymenoptera date back to geologic periods far antedating man. Furthermore, they go through thirty generations to man's one. Hence their society is a far more experienced one than ours. The query naturally arises, may these tendencies away from family life on the part of modern man and I should not omit woman, which are causing some of us such great distress denote a social evolutionary trend toward the civilization of the ant and the termite? If so, very radical and to many of us unwelcome biological changes of structure and function will be necessitated to attain the highly perfected and coordinated society of these insects. It is true that already artificial means such as sterilization of the unfit, have been adopted by man to meet certain threatening conditions, a further extension of this procedure might conceivably provide a class of sexless workers but I have not yet heard any active propaganda by man for female domination or, by woman for the prodigious female fecundity of the arthropods.

After all these insect societies may not be so pleasant and harmonious as they appear

No psychoanalyst has informed us of their emotional conflicts, their egos, urges, and subconscious states. We do know that they engage in war and harbor the institution of slavery, two indications of disharmony, one of which civilized man has succeeded in eliminating after an age-long struggle.

Let us return to more immediate concerns. The very foundation of American democracy including the practice of family medicine depends on the preservation of family life. Each family occupying and owning its own home with a plot of land is an ideal, which was nearly realized in New England at the time of the founding of the republic and is no less desirable now. Every head of a family should feel that he has a stake however small in the country. Nothing gives such a sense of responsibility and stability as the ownership of land. At the present time there is a widespread appreciation of this, and strong efforts are being made by some socially-minded leaders for the decentralization of industry, whereby men may live on small farms and work part time in small factories. This seems a promising experiment. With the automobile, improved roads, electricity, and the radio, the former isolation and drudgery of country life has been largely eliminated, and there has been a distinct and salutary movement back to the land which should be encouraged in every way.

The dangers moral and physical of a huge floating population aggregated in the great cities moving about from one wretched tenement to another in search of work or support, have been amply demonstrated in the last few years and is well appreciated by the physician. The medical profession then if it seriously wishes to establish and maintain the family, medical adviser must take part in the great social movement to safeguard the family itself.

With the progress of medical science and art the sum of medical knowledge which students must acquire becomes increasingly greater and now assumes appalling proportions in the minds of the elder generation. Fortunately, the younger generation seems to view the situation with a fair degree of equanimity and confidence. Each generation must learn more than its predecessor, not ignoring the discoveries and errors of the past, it must keep abreast with its own advances. The human brain seems to have been capable of absorbing this increased load of knowledge so far and the saturation point fortunately does not seem to have been reached for the higher intellects at least. In every generation there still are a few exceptional individuals, geniuses they are called, who are even capable of adding original contributions to the sum of previous knowledge.

Human offspring however are born into the world to-day as ignorant as they were six thousand years ago at the dawn of the historical era.

An increased capacity for acquiring knowledge may be inherited, but the knowledge itself has to be imparted, demonstrated, or hammered in, by a slow and painful process

It is a source of frequent and perhaps sophomoric argument as to whether there has been actual advance in human intellectual achievement since the days of the Greeks. However debatable this question may be as regards attainments in literature and the arts, progress has been undeniable in the sciences, and especially in medical science. This does not necessarily imply an evolutionary advance in human brain power. The time interval has been comparatively short for evolutionary changes as judged by the time scale of man's ascent from simian stock. The advance in scientific knowledge has been gained bit by bit, and through generation after generation, by observation and experiment aided by the discovery and perfection of instruments of precision which have enormously extended the field of observation, so that the human brain to day has tools to work with which were denied to its predecessors. There is no question that the educated man of to-day is required to retain a mental impression of a mass of facts and figures, words and formulae, which like entropy are ever-increasing and never diminishing with which the minds of the Grecian youth of the time of Aristotle were comparatively unencumbered. To continue the scientific advance and arrive nearer the goal of ultimate knowledge, each generation must hand on to the next the achievements and truths obtained at the cost of so much labor and suffering hence in the medical profession our interest in, and solicitude for, those agencies engaged in the preservation, extension and promulgation of medical knowledge, medical schools, hospitals, libraries, health boards, and medical societies

Those of us who have served on the examining boards of large hospitals and have had the opportunity of seeing large numbers of young medical graduates coming up for internship cannot fail to have been impressed with the capabilities of these young men, their mental activity, intelligence, and earnestness. It is a never-ceasing source of wonder to observe the adaptability of our surgical internes. They come to the hospital unskilled in the technique of a highly technical profession. After an eighteen-months' internship and a year or two of experience as resident, the best of them master the manual part of surgery to such a degree, that they equal and often excel the skill of their teachers who have spent a lifetime in the operating room. This phenomenon which is perhaps somewhat humbling to the pride of the visiting staff is for the good of the art. Judgment, poise, and discernment, are acquired somewhat more

slowly. There surely is no ground for anxiety on the score of the new material which is coming into our profession at least in this locality and in the larger hospitals. I believe the same to be true elsewhere as well.

A few words in praise of the older men in the profession, the practitioners of medicine and surgery, may be allowed as the privilege of one no longer an active participant in practice. With a few striking exceptions I firmly believe that the members of our profession have nobly upheld the principle of integrity of character emphasized by Dr. John Homans so many years ago. Taken by and large they have also upheld the best traditions of family life. Realizing a true sense of values they have led simple, unselfish, busy and happy lives free from the taint of commercialism and hypocrisy. They are almost universally lovers of nature and the great outdoors. Music, art, literature and sport have been abundantly cultivated in their spare hours. High-minded, humane and altruistic, no body of men is more worthy of respect and consideration. They have conquered many dragons in the past for the benefit of humanity. Others of a different breed now lie across their path.

* * * *

The triumphs of modern medicine and surgery have indeed been great. It would be both unnecessary and tedious to this audience to rehearse them in greater detail. How far then have we progressed toward our true objectives?

These objectives are generally stated to be the prolongation of life, the relief of suffering, the prevention and control of disease, and the promotion of the health and well-being of man.

As to the prolongation of life, reliable statistics conclusively show that life expectancy has been very considerably extended during the last century. One hundred years ago the average expectation of life at birth was about forty years. The latest statistics show the amazing figure of over sixty years for average life expectancy at birth. This extraordinary advance has been accomplished largely by a decrease in the mortality rate of infants and children. The mortality rate of adults of middle age and beyond has not been appreciably diminished in the last fifty years. It would be unreasonable to expect that the range of life expectancy should increase in the future at the rate which it has in the last hundred years. As long as man is mortal, disease and death must come. The effort to extend the span of life must inevitably come into ultimate conflict with the second objective, the alleviation of suffering, unless or until that ideal of the natural death so earnestly expounded by Metchnikoff should finally be attained. In this connection I feel impelled to express my personal conviction that the pro-

longation of life by highly artificial means at the expense of suffering, in the last stages of fatal disease, is neither sensible nor humane.

The relief of suffering, our second objective, although very far from being attained has been immeasurably advanced: anesthesia, analgesia, nerve blocking, the aseptic treatment of wounds, expert nursing, and countless new inventions in technique and instrumentation have contributed to this end.

Our third objective, the prevention and control of disease, has already been commented upon. The record is a brilliant one in which medical science and art drawing on the researches of many allied sciences together with the coöperation of an enlightened people have accomplished much with high hopes of an even more brilliant future.

Much still remains to be done. The uncontrolled incidence of many infections, especially those of the respiratory tract including the common cold, influenza and pneumonia is a challenge to the profession of to-day. Cancer and other malignant tumors are perhaps the greatest scourges of modern times. The degenerative diseases of the vascular system seem to be definitely on the increase. Arthritis is as prevalent and crippling as ever. Nervous instability, mental derangements, idiosyncrasy and insanity are increasing problems.

Our final objective, the promotion of the health and well-being of man is one of vast scope. The promotion of health involves not only the prevention and control of disease but the maintenance of the state of being well physically and mentally. The promotion of well-being involves in turn more than the maintenance of good health. The words "being well" when transposed to "well-being" have acquired a broader meaning denoting general welfare including material and spiritual attributes of life which transcend the scope of medicine.

Much has been done for the promotion of the health and well-being of man in preventive medicine, surgery and dentistry, through the instrumentality of many organizations, national, state and local, engaged in promoting public health, sanitation, hygiene, physical, social and mental, accident prevention, social service, dietetics, health examinations and public instruction. Much more remains to be done and "the extent of the field becomes even more apparent than our progress." The problems involved are the most serious and difficult which concern the medical profession to-day. It is not only the medical profession which is concerned, but the whole body politic. It will require the intelligent cooperative efforts of our governing bodies, and of all forward-looking agencies, professions and individuals, to achieve real progress toward this objective.

The strain of present-day life is taking a heavy toll from those caught in the irresistible tide of what is called our advancing civilization. Not only does it exact its penalties on the nervous, circulatory and digestive systems, but the mechanized civilization of to-day is destroying its thousands and maiming its hundreds of thousands by direct external violence.

It has been the proud boast of man that in building up his civilization he has overcome the forces of nature, but in the process he has raised up mechanical monsters of destruction far more perilous than all the plagues of the past.

To the physician earnestly struggling to reduce the morbidity and mortality of disease the attitude of the public and the governing powers often seems incomprehensibly blind, if not callous. It is disheartening to say the least to those who have dedicated their lives to war on cancer, tuberculosis, and infectious disease to realize how little value the community apparently sets on human life as manifested by its complacency toward the staggering sum of fatalities from accident, homicide, and suicide.

The widespread participation in all forms of insurance by the American people is doubtless commendable. It spreads the financial burden resulting from casualties, which might be crushing to an individual, over such a large number of policyholders as to seem nominal. By the same token it tends to dull the moral sense of responsibility of the reckless toward accidents. There is a state of mind altogether too prevalent which might be expressed in the vernacular: the company pays the damages, step on it. It is the community that pays in the long run and is paying grievously dear.

The insurance companies of course are well aware of the situation and have made commendable efforts to correct it. Corrective measures to be effective, however, must come from other sources.

Figures compiled by one of the large national insurance companies show that in the year 1933, there were 29,900 deaths in the United States as the result of automobile accidents, 4,850 of these were among children. Over 850,000 persons were injured, 139,000 of these were children under 14 years of age. In the last ten years over 273,000 persons have been killed by automobiles. In the last four years there have been nearly four million injured. These figures far overshadow the casualties incurred by the American Expeditionary Forces in the Great War. The official war figures are 36,694 killed in action and 224,089 wounded of whom 13,691 died of wounds. We are all well aware of the cost to the nation of the disabilities resulting from the World War. Estimates of the cost of the nearly four million injuries resulting from automobile accidents in the last four years stagger

the imagination. It is estimated that the cost of industrial injuries alone is over five billion dollars annually.

The mortality statistics of the census bureau for the registration area of Continental United States for the year 1929, the last year for which full official figures have been published, show over 94,000 deaths from accidents, over 16,000 suicides, and just under 10,000 homicides, a total of 120,000 violent deaths. These three forms of violent death together account for more victims than any single cause in the international classification of causes of death with the sole exception of heart disease, which was recorded as the cause of 245,244 deaths. Next comes cancer with 111,000, pneumonia and nephritis each 106,000, and so on down the list. For those in the active period of life, from twenty to forty-five years of age, deaths by violence exceed any other cause of death. It is significant that, of the 1,386,363 inhabitants of the United States who died in 1929, only 12,319 were recorded as dying of old age in that hectic year. What of the great epidemic scourges of the past? In 1929, 151 persons died of smallpox, nineteen of typhus, none of plague, none of yellow fever, none of cholera.

Of all the forms of death it would seem that violent and accidental death should be the most preventable except those resulting from the uncontrollable convulsions of nature such as storms on land and sea, earthquakes, floods, landslides, lightning, sunstroke, etc., which in this fortunate land have been factors of relatively minor importance. The blame is not to be laid on nature but on man.

The disabilities and deaths resulting from accident and depravity may not be considered to be strictly within the province of the medical profession. It is, however, the medical profession which is called on for the treatment of the victims, and with the same altruism which our profession has demonstrated in the prevention of disease we should join in the attack upon these modern scourges at their source. A very notable improvement in the rate of fatalities and accidents in industry has already resulted from the cooperative efforts of government, industry, and labor, with the medical profession. This is, however, but a part of the problem and the smaller part.

The profession needs to be aroused to the full implications of our objective of promoting the well-being of man. The problem involves grave questions of sociology, economics, and gov-

ernment, which are beyond our control, it is true, but the united medical profession should and would have an enormous influence for good if exerted in the right direction. To no one are the varying traits of weakness and nobility in human nature more deeply revealed than to the physician. He is by training and instinct sympathetic and understanding. He is well aware of the crying need in domestic life of the cultivation of those simple basic virtues upon which the maintenance of the home and family depend. He is equally well aware of the crying need of character, integrity and intelligence in public affairs. What body of citizens is better qualified to help in promoting these by precept and example?

Many organizations and individuals outside the medical profession are actively engaged upon these problems at the present moment. Many individuals and organizations within the medical profession and among them members of this Society have for many years waged a valiant battle for the betterment of social and industrial conditions affecting the health and well being of the community.

The profession as a whole, however, is apathetic, reluctant to venture beyond what seems its legitimate field, but as Dr. Shattuck said so many years ago "the horizon opens before us as we go on."

Without relaxing for a moment our efforts along the lines of past endeavor, for the frontiers against disease so hardly won must be maintained and extended, we must at the same time take the offensive against an even more insidious foe infiltrating the fabric of our social welfare.

The active participation by the medical profession in civic, economic and sociological matters affecting the well-being of the people is, I believe, sorely needed to day to avert a social cataclysm threatening the very life of the nation.

We must, like Sir Edward Parry's Arctic party, raise our eyes from the track along which we are plodding to above the horizon if we would measure the progress toward our true objectives.

I would not advocate a return to the teleological views of Galen, but a teleology of aim and effort is as essential in medicine as in religion of which it might be considered a part.

The occasion is pressing, the capabilities are at hand, may neither the vision nor the will be found wanting.

A CASE OF POSTENCEPHALITIC PARKINSON'S DISEASE
TREATED BY TOTAL THYROIDECTOMY*

BY ABRAHAM MYERSON, M.D.,† AND DAVID D. BERLIN, M.D.‡

THE rationale which prompted one of us (Abraham Myerson) to select a case of Parkinson's disease for total thyroidectomy is as follows

1 In active untreated cases of Parkinson's disease the metabolism is increased. Thus in a very severe case who was deprived of sedative medication for a week, the metabolism rose to +60 per cent. In several other cases the metabolism has ranged between +15 and +40. When these same cases are given large doses of stramonium or hyoscyne with some control of tremulous muscular activity, the metabolism drops. These cases will be cited, together with other facts in a detailed manner, in a later paper.

2 The drugs that are in any way successful in ameliorating the condition of patients with Parkinson's disease lower metabolism.

3 These facts together with the belief that the normal thyroid activation is too great for an organism with defective neuromic links lead to the hypothesis that if the thyroid were totally removed and the patient allowed to become myxedematous, the myxedema could be controlled and the symptoms would be ameliorated in much the same way that reducing the speed of an engine lessens shaking and rattle in a light or defective machine.

The later facts showed that this rationale of approach is not entirely correct. Nevertheless, the results of operation were quite striking.

CASE HISTORY

Estelle C. aged 32 married had encephalitis at the age of nineteen. In the next two years the patient was quite sleepy, weak and depressed. This condition persisted moderately until about twelve years ago when she began to notice shaking of the right leg. Gradually this shaking spread to all limbs, face and tongue. The face became stolid, and the patient presented a characteristic Parkinson's syndrome. Her baby was born in 1927. Her symptoms increased. Her condition grew worse despite the varied types of treatment she underwent and for two months before it was decided to perform a thyroidectomy upon her she had become bedridden. The tremor was as marked as any case we have noted. The churning of the jaws was so great that the saliva became very foamy. She could not feed herself and her speech was almost indistinguishable. At this time she was receiving eight hypodermic injections of 1/50 hyoscyne each day together with varying, but large, doses of luminal, amylal and other sedatives.

With grateful acknowledgment to the Greater Boston Bickur Cholim Hospital and the Beth Israel Hospital whose cooperation made this procedure possible and to the patient who fully and freely gave her consent.

†Myerson—Professor of Neurology, Tufts College Medical School. Berlin—Assistant Professor of Anatomy, Tufts College Medical School. For records and addresses of authors see "This Week's Issue" page 1334.

She had received during the period of her illness from various neurologists hyoscyne, stramonium, harmin, atropin, parathyroid gland, calcium lactate, and belladonna. It is noteworthy that 3 gr of stramonium leaves three times a day had no effect. Sterile milk was also employed in the latter part of 1930. Typhoid vaccine was tried for a moderately prolonged period of time. Thus, in summarizing the treatment, all forms had been used, and even with the most massive doses of hyoscyne and other drugs, she had become bedridden and her tremor and rigidity were extreme, the tremor being more noticeable, however, than the rigidity.

She entered the Greater Boston Bickur Cholim Hospital on June 5, 1929. She was sent to the Beth Israel Hospital on December 5, 1933 where a total ablation of her thyroid was done without incident by Dr. David D. Berlin. Prior to the operation her metabolism was -29. This we ascribed to the enormous doses of hyoscyne which she was receiving.

No noticeable improvement occurred during the first two weeks. In fact, when she left the hospital her condition was probably somewhat worse than before the operation. About the third week it was noted that the patient's condition was improving. Gradually as she approached myxedema, manifested by harshness of the skin and a dropping metabolism which reached -35, it became possible to control her condition with much less hyoscyne than before. Some time in the early part of February 1934 the patient was able to get up out of bed, walk, raise her hands and hold them out stretched with but little tremor. There was some definite tremor around the month. She could be kept in this condition with three doses of hyoscyne a day together with a small dose of luminal. Prior to operation she had complained of pain in her ankles and feet. This pain became the most troublesome of her symptoms.

On March 21, 1934 the note states: patient walks with a slight drag of the legs and with a typical Parkinsonian facies and lack of associated movements. Her speech is clear although the voice is weak. There is no noticeable tremor of the face. The tongue protrudes straight, is red, and without noticeable tremor. There is marked plastic rigidity of the neck. The patient can feed herself. When she raises her arms they are held quite steady. Her grip is fairly firm. There is no swing of tremor to the opposite side when either hand is used. Although movements of the hands set up an associated tremor which is slight of the mouth. Her arms are not spastic. The patient herself feels very much better. She does not fall asleep so frequently as formerly and she is very grateful for the results.

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The hyoscyne was not administered for two days. During this period the patient became markedly worse and in fact, reached her pre-operative stage. She became so tremulous that she could not use her hands. Her speech became very indistinct and the churning of the saliva into foam recurred. When she was put back on hyoscyne which is now being administered in two doses of 1/50 gr, the symptoms became immediately ameliorated to the point where she is now ambulatory.

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The hyoscine was not administered for two days. During this period the patient became markedly worse and in fact reached her pre-operative stage. She became so tremulous that she could not use her hands. Her speech became very indistinct and the churning of the saliva into foam recurred. When she was put back on hyoscine which is now being administered in two doses of 1/50 gr the symptoms became immediately ameliorated to the point where she is now ambulatory.

The myxedema was easily controlled by a small dose of thyroid, ranging from $\frac{1}{2}$ to $\frac{3}{4}$ gr, per day. We have not tried the effect of large doses of thyroid because it seems likely that this would have the effect of stopping the hyoscine, that is, it would restore the previous helpless condition. The after-care in this case is quite difficult, and it is probable that the patient will require constant medical management.

The patient was demonstrated at the Boston Society of Psychiatry and Neurology on April 26, 1934. She left the Greater Boston Bickur Cholim Hospital for the first time with the exception of her ambulance ride to the Beth Israel Hospital. She was very composed during the automobile trip, got out of the machine by herself, walked up the stairs leading to the place of meeting, was not at all agitated by the presentation before a rather large group, walked around, raised her arms and legs without noticeable tremor, and was driven home in a taxi quite jubilant over her performance.

THE WORKING HYPOTHESIS

We are working on a series of cases and selecting at the present time the hopeless and completely disabled types. The theory that the myxedema in itself would lead to amelioration of symptoms must be modified in view of the fact that when the administration of hyoscine was stopped the patient immediately slumped into her previous condition. The provisional explanation or working hypothesis is that with the thyroid removed, the administration of the hyoscine becomes effective, whereas with a fully operative thyroid the organism is activated against the full effect of the drug.

We do not in the least expect that this is a cure of Parkinson's disease, nor do we know that any other case will react as this one did. The results constitute a valid basis for further work along this line.

THE EFFECT OF DINITROPHENOL ON THE METABOLISM AS SEEN IN SCHIZOPHRENIC PATIENTS*

BY J M LOONEY, M.D.,† AND R G HOSKINS, M.D.‡

IT has been found during the course of our investigation on schizophrenia, that patients suffering from this disorder have lowered basal metabolic rates¹. Previous therapeutic efforts with thyroid preparations appeared to be beneficial in certain selected cases².

The studies on 24 dinitrophenol by Cutting and Tainter^{3, 4, 5} indicated that the basal rates could be increased by the use of this drug without any harmful effect on the patient. It seemed worth while, therefore, to raise the basal metabolic rate in a group of patients by means of this compound and estimate the concomitant changes in various physiological and psychological functions in order to determine whether the beneficial influence of thyroid was due to the increase in the basal metabolic rate, per se, or to other effects of the medicament.

For this purpose ten patients were given 24 dinitrophenol by mouth in gelatine capsules beginning with an initial dose of 30 mg per kilo daily. The medication was continued for a period of seven weeks and increases in the dosage in some cases up to 4 mg per kilo were made whenever it seemed warranted by the individual's reaction.

Analyses were made weekly, beginning two

weeks before the period of medication and continuing for two weeks afterward on both blood and urine. Determinations were made of the oxygen consumption rates three times a week. On the blood, determinations were made for non-protein nitrogen, urea nitrogen, uric acid nitrogen, creatinine nitrogen, sugar, cholesterol, lactic acid, glutathione, carbon dioxide, oxygen and pH. In addition, studies of complete blood cytology were also made. Each week twenty-four hour urine specimens were collected, catheterizations being employed at the beginning and end of the period to insure complete and accurate collection. These were analyzed for total nitrogen, urea nitrogen, ammonia nitrogen, uric acid nitrogen, and creatinine nitrogen. Routine qualitative determinations were made for the presence of sugar, albumin, acetone bodies and bile pigments as well as microscopic examinations for casts, etc.

In the first chart we have given graphs of the weights for each of the ten patients. It will be noted that a gradual loss of weight is experienced in every case, ranging from 0.8 kilo gram to 5.6 kilograms, with an average loss of 2.5 kilograms. Undue loss in weight was combated by keeping the patients on a non-restricted diet and in three cases by supplementary feeding of milk and eggs between meals. For this reason the loss of weight in our patients was much lower than that in the obese patients reported by Cutting⁴ which averaged 0.9 kilo-gram per week.

The oxygen consumption rate was increased

*From the Memorial Foundation for Neuro-Endocrine Research and the Research Service of the Worcester State Hospital, Worcester, Massachusetts.

Read at the December Meeting of the American Association for the Advancement of Science held in Boston.

†Looney—Director of Laboratories, Memorial Foundation for Neuro-Endocrine Research, Worcester State Hospital. Hoskins—Director of Research, Memorial Foundation for Neuro-Endocrine Research, Boston. For records and addresses of authors see This Week's Issue, page 1234.

on the average approximately 50 per cent from a mean value of 84 per cent of normal expectation to 123 per cent, as may be seen from the graphs in chart II. One subject was almost completely refractory to the drug in the dos-

This is in contrast with the findings of Cutting, Mehrrens, and Tainter⁴ who found that in non-psychotic subjects the oxygen consumption rate fell to normal within three to four days. Evidences will be noted in two of the charts of

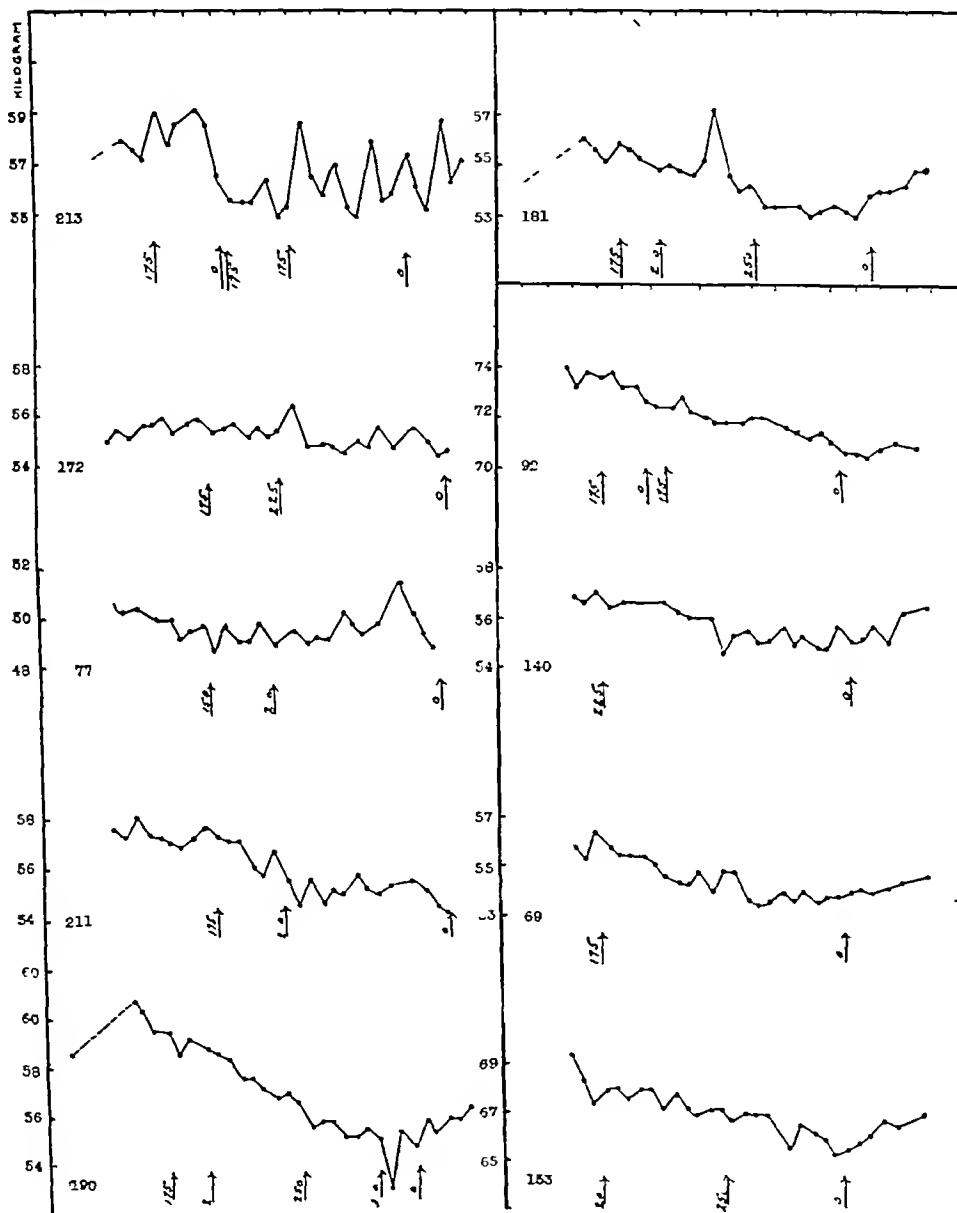


CHART I
BODY WEIGHT

Observations at irregular intervals Number of days intervening being indicated by the distance on the horizontal axis (Each space represents five days)

age used. The increase commenced immediately after the taking of the first dose and reached its full effect within a few days. The oxygen consumption rate remained elevated after the administration of the dinitrophenol had been terminated and did not again reach its pre-medication level until ten to fourteen days later.

the erratic and unaccountable elevations in the rate that are often seen in schizophrenic patients. Because of this peculiarity, trends are more significant than individual findings.

There was no appreciable increase in body temperature and the pulse rate, systolic and diastolic blood pressure readings remained approxi-

mately constant This point is worthy of consideration in view of repeated attempts which have been made to produce a formula for predicting the basal metabolic rate from the pulse rate, pulse pressure, and blood pressure determinations

what elevated during the entire period of medication These increases were so marked in the first four patients, in one of whom the non protein nitrogen reached a maximum value of 54.0 mg per 100 ml that the advisability of discontinuing the study was seriously considered How

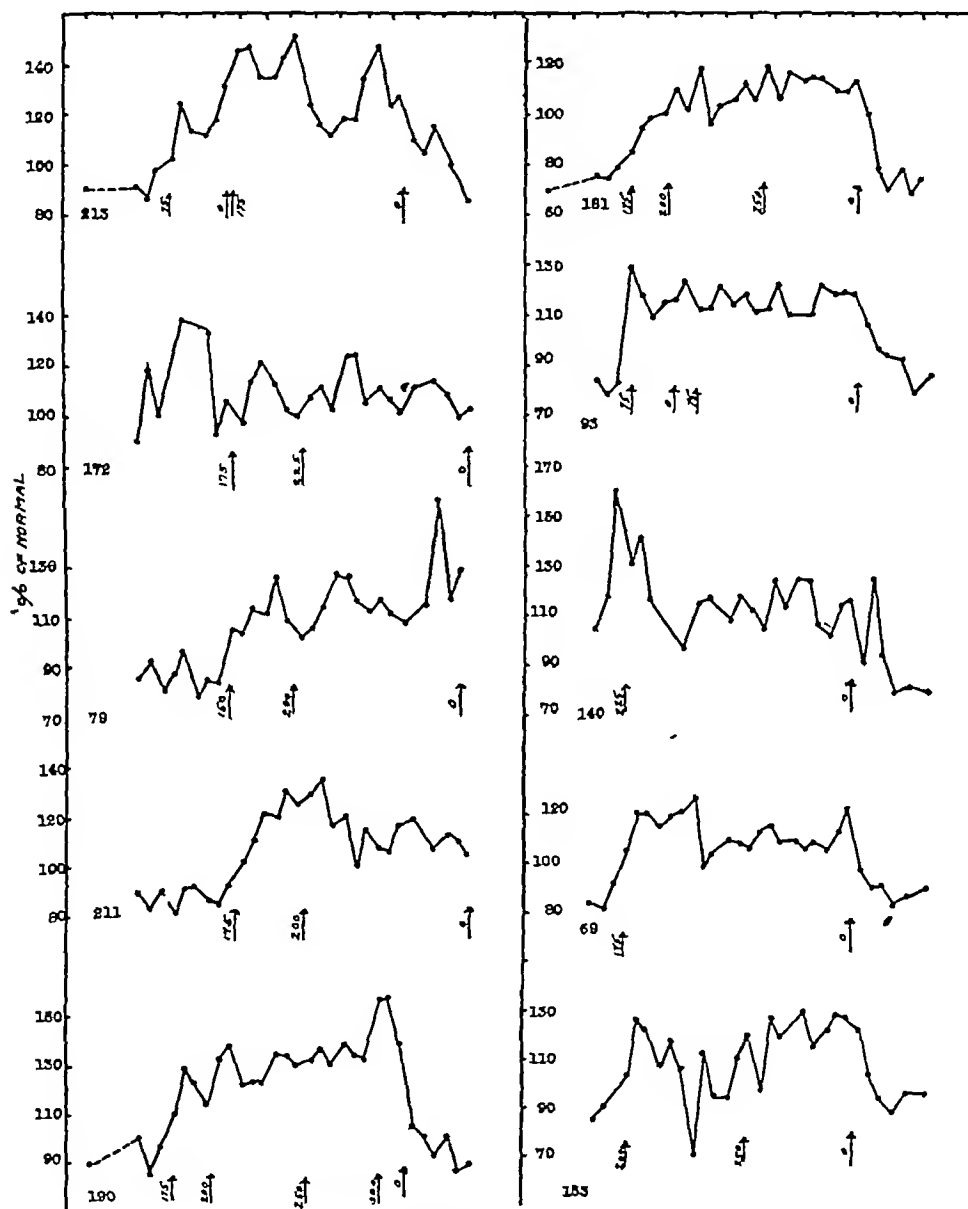


CHART II.
OXYGEN CONSUMPTION RATE.

Observations at irregular intervals. Number of days intervening being indicated by the distance on the horizontal axis (Each space represents five days)

The effect upon the nitrogenous constituents of the blood is somewhat striking, as shown in charts III, IV, V, and VI. In every case there is a diphasic reaction consisting of an initial rise in the nonprotein nitrogen, urea nitrogen, and creatinine nitrogen, and subsequently a fall. The uric acid nitrogen appeared to remain some-

ever, as careful examinations of the urine showed no indication of renal damage and as the following week the nitrogen content of the blood had receded from its high level, it was decided to continue with the medication. In one case only was any gastro-intestinal disturbance noted. This patient vomited a small amount

of watery material during the second week of medication so that on one day no drug was given.

Despite the gradual loss of weight, no evidence of excessive loss of nitrogen was found by quantitative analyses of the urine. There

take The creatinine output fluctuated slightly around the mean value but did not change significantly in either direction. The total urinary volume varied greatly among the individuals, one patient having an average daily output of 1000 ml and another one of 5291 ml, but the

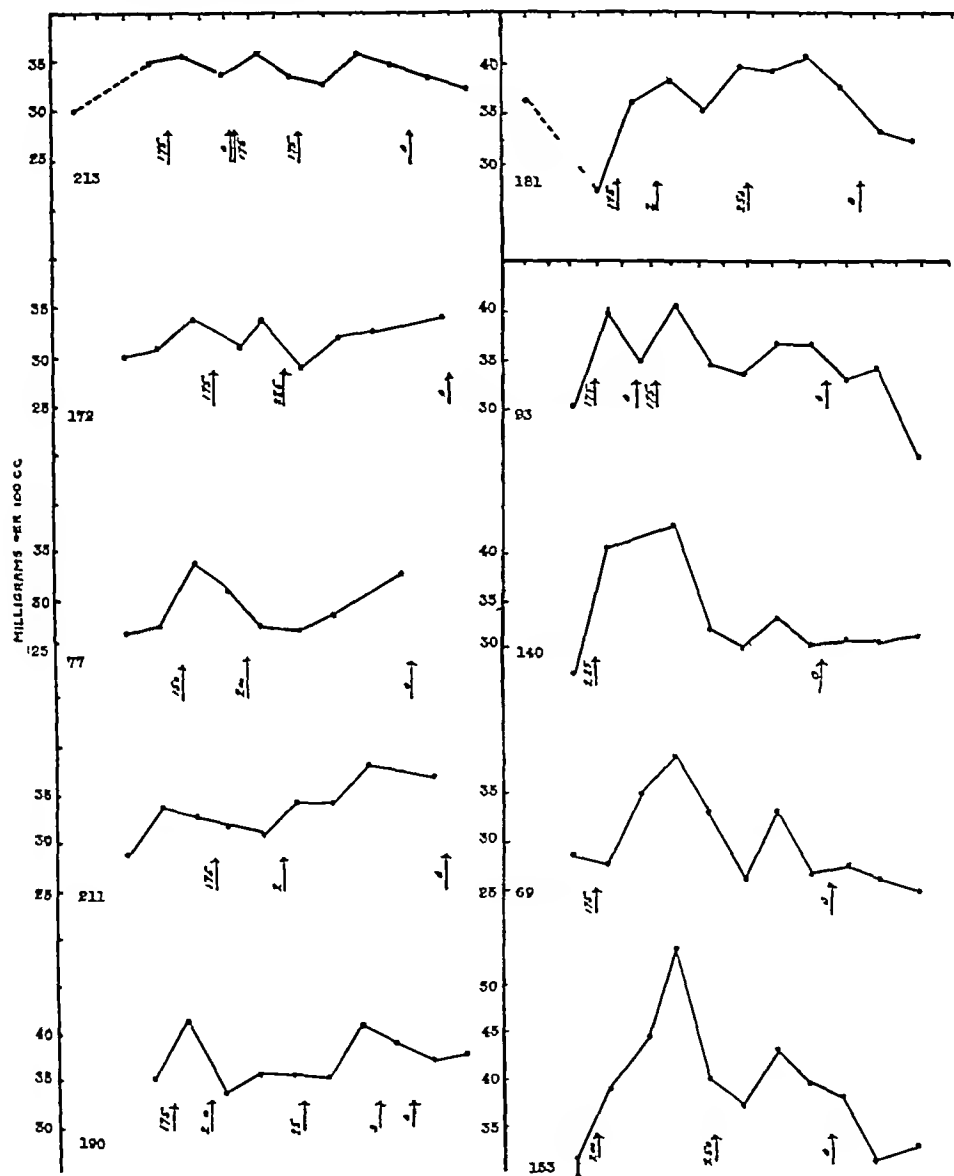


CHART III
NONPROTEIN NITROGEN

Observations at irregular intervals. Number of days intervening being indicated by the distance on the horizontal axis. (Each space represents five days.)

was no characteristic trend in the nitrogen output of these patients, three showing a tendency to excrete more nitrogen, three to excrete less, and the remaining four showing no change. This finding supports that of Magne, Maver, and Plantefol⁴ who reported no increase in nitrogen excretion in dogs on a constant nitrogen in-

volume for each individual remained relatively constant. There was no definite relationship between total urinary volume and total nitrogen output.

The effect of the increased metabolic rate upon the carbon dioxide and oxygen content of the venous blood was also determined. It was

mately constant This point is worthy of consideration in view of repeated attempts which have been made to produce a formula for predicting the basal metabolic rate from the pulse rate, pulse pressure, and blood pressure determinations

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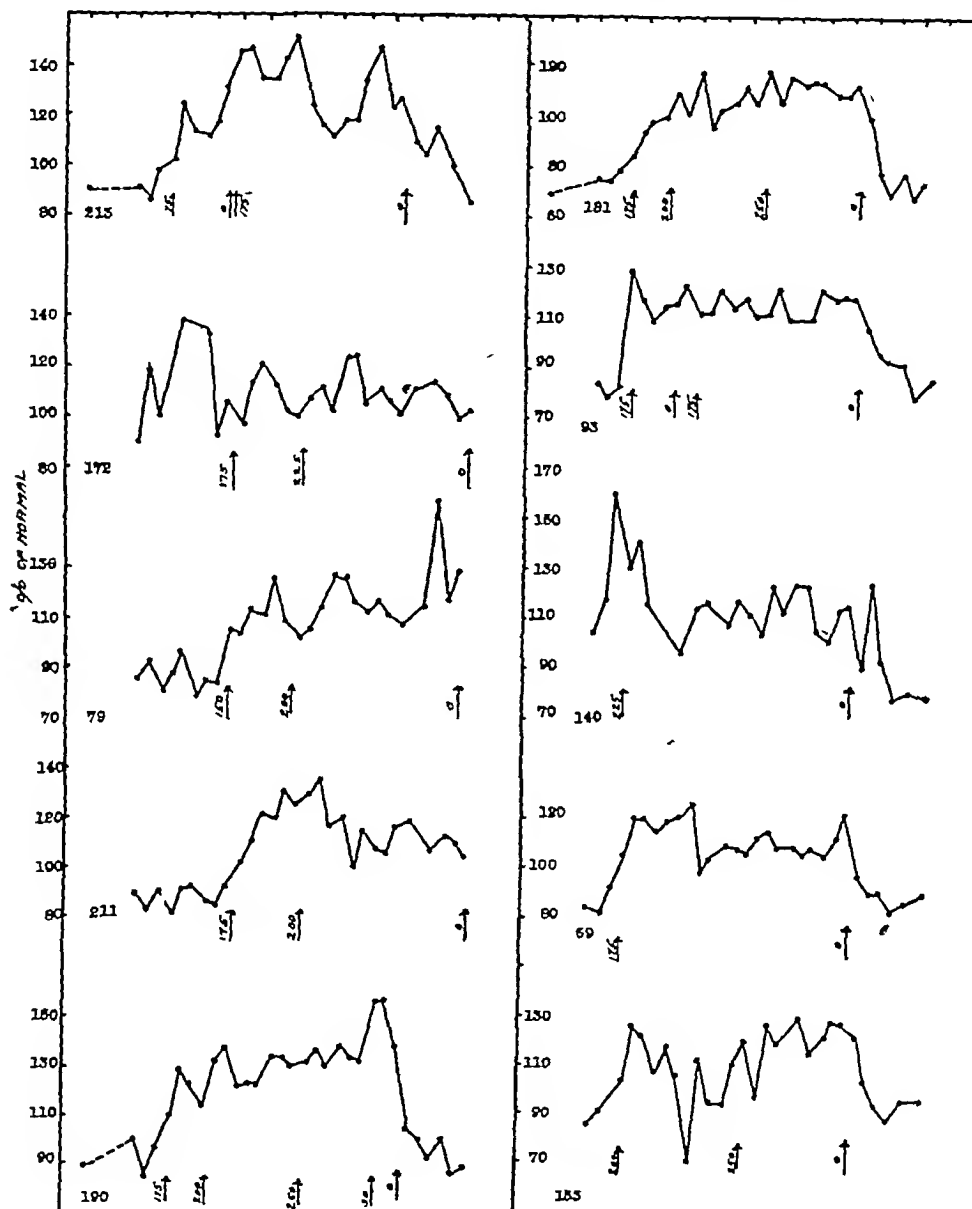


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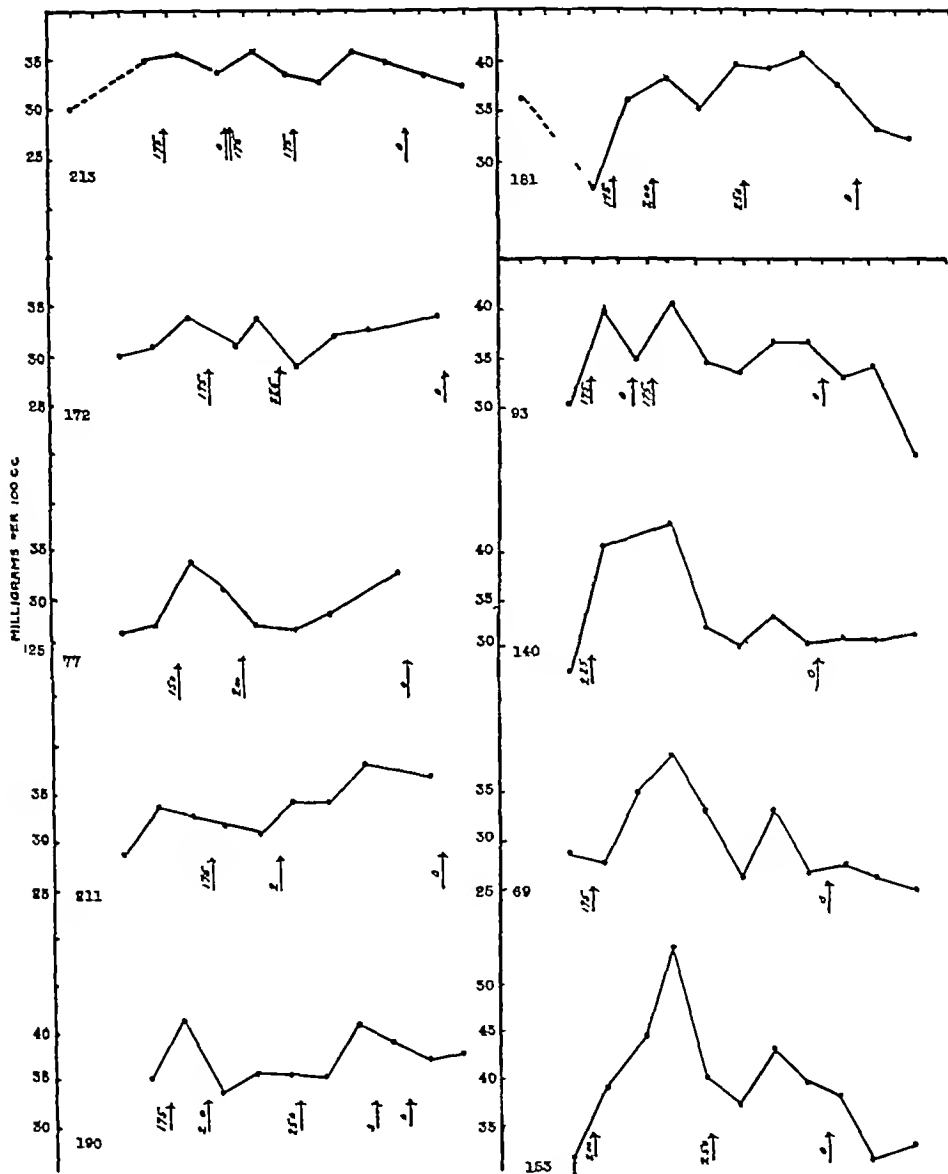


CHART III.
NONPROTEIN NITROGEN
Observations at irregular intervals. Number of days intervening being indicated by the distance on the horizontal axis (Each space represents five days)

was no characteristic trend in the nitrogen output of these patients, three showing a tendency to excrete more nitrogen, three to excrete less, and the remaining four showing no change. This finding supports that of Magne, Maver, and Plantefol^o who reported no increase in nitrogen excretion in dogs on a constant nitrogen in-

volume for each individual remained relatively constant. There was no definite relationship between total urinary volume and total nitrogen output.

The effect of the increased metabolic rate upon the carbon dioxide and oxygen content of the venous blood was also determined. It was

thought that an increased energy exchange in the tissues might be mirrored by an increased output of carbon dioxide and a lowering of the oxygen content of the venous blood. However, no such effect was noted, the carbon dioxide values remaining relatively constant and the oxy-

tween 5 and 20 mg per 100 ml of blood during the period of medication, but no consistent increase. This is indicative of the fact that anoxemia does not occur as a result of the increased demand of the tissues for oxygen. This finding is in agreement with that of Hall et al⁸, who

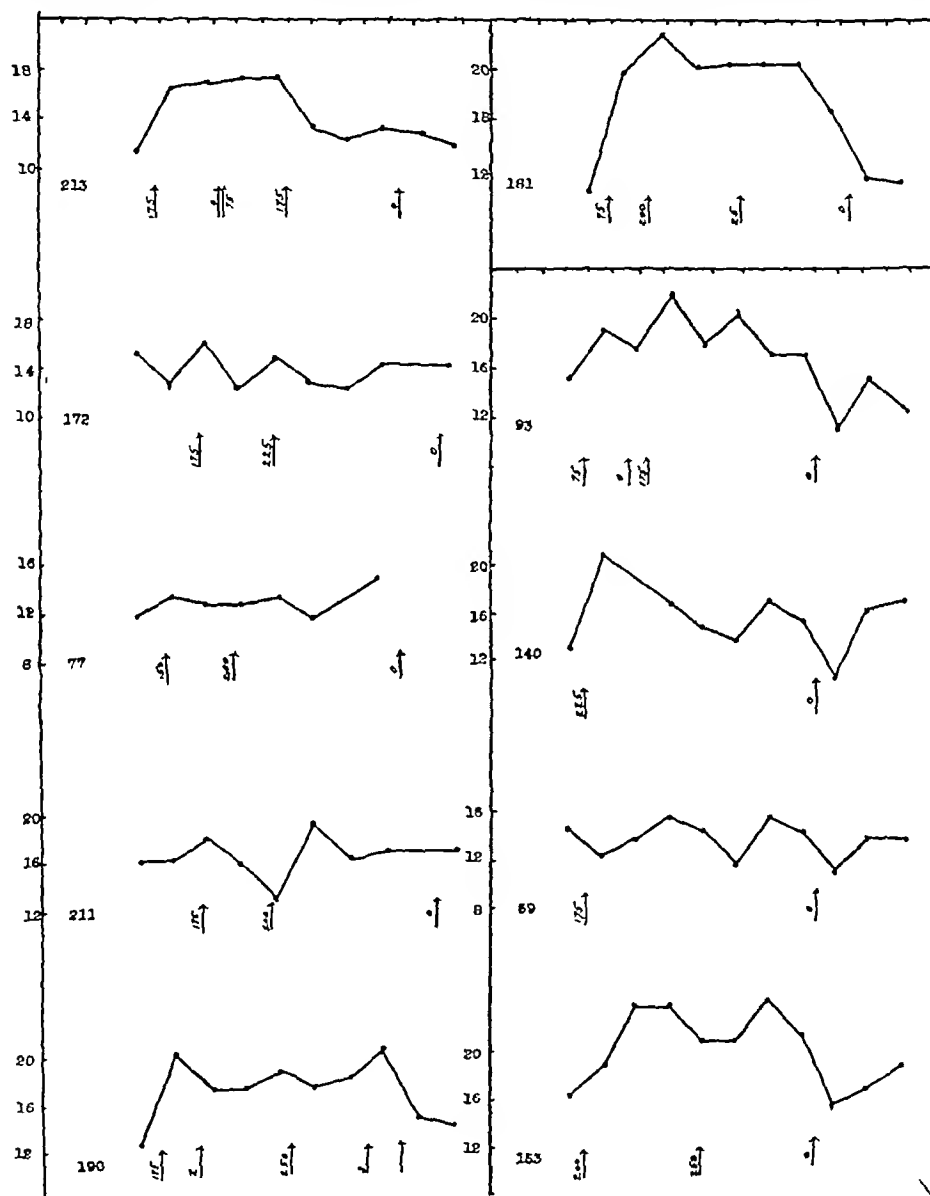


CHART IV

Urea

Observations at irregular intervals. Number of days intervening being indicated by the distance on the horizontal axis. (Each space represents five days)

gen values in some cases showing increases and in others decreases

As previous investigations had shown that the lactic acid content of the blood of schizophrenic patients was significantly higher than that of normal individuals, this was determined by the method of Friedemann and Kendall⁷. The values obtained showed considerable fluctuation be-

found that in dogs even with large doses, 10 to 20 mg per kilo, there was no consistent increase in the lactic acid content of the blood until the terminal stage was reached. The pH of the blood was determined by the glass electrode and electron tube potentiometer of Stadie et al⁹. A slight increase amounting to 0.05 pH was noted in six of the ten cases

No change was noted in either the reduced or total glutathione content of the blood, the values falling between 40 and 50 mg per cent. The blood cholesterol showed marked variation, but no significant trend could be elicited, the values ranged from 122 to 219 mg per 100 ml of blood. The blood sugar values showed a tend-

SUMMARY

In order to study the effect of raising the low basal metabolic rate, which is consistently found in schizophrenic patients, by the use of a dinitrophenol, this drug was administered to ten patients in doses of 3 to 4 mg per kilo for a period of forty-nine days.

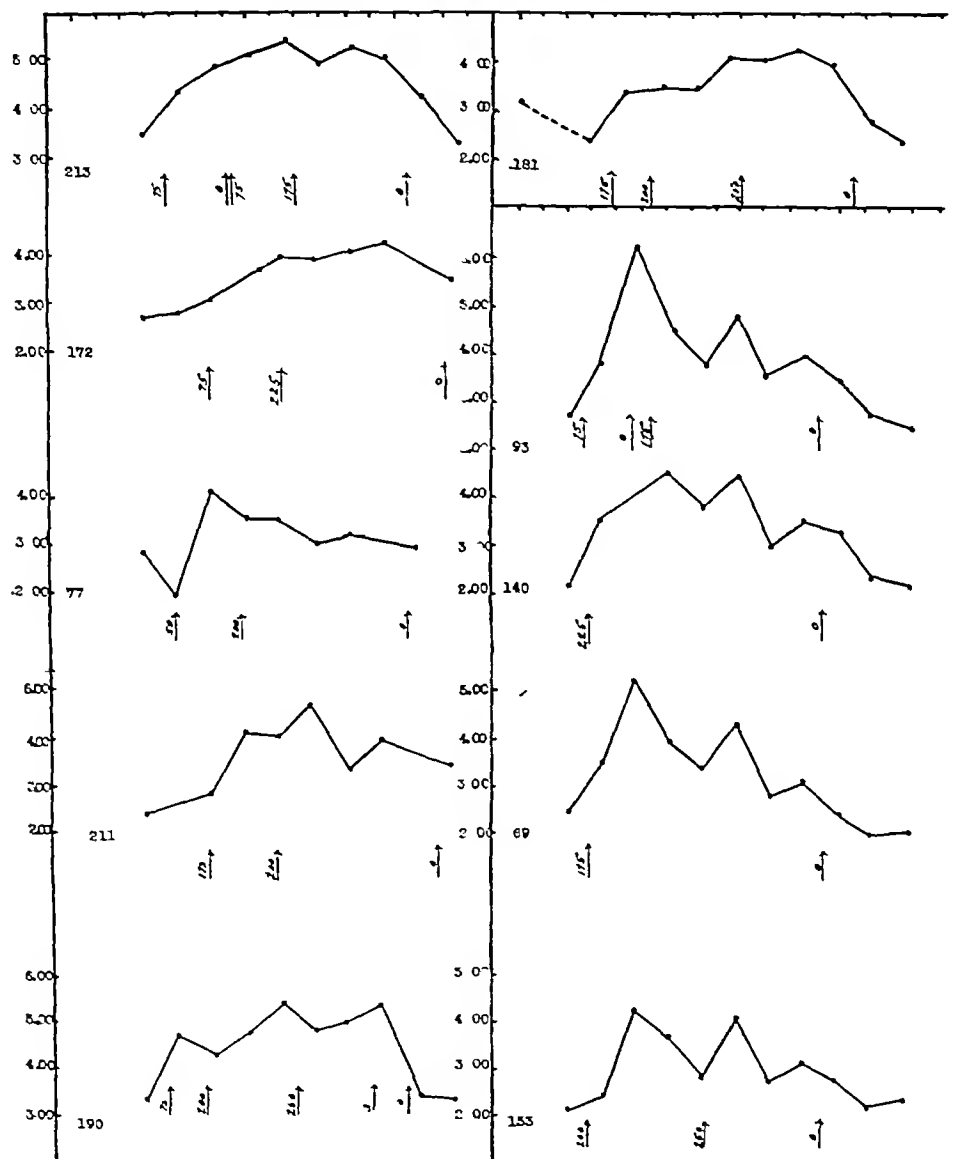


CHART V

Lactic Acid (Blood)

Observations at irregular intervals. Number of days intervening being indicated by the distance on the horizontal axis (Each space represents five days)

ency to rise, but the increase was not of sufficient magnitude to be regarded as significant.

There was a suggestion that the medication may prove to be of some therapeutic value, but our data are not yet sufficiently extensive to permit accurate judgment.

Each week analyses were made on blood for complete nitrogen partitions, sugar, cholesterol, lactic acid, glutathione, carbon dioxide, oxygen, and pH. Nitrogen partitions were made on urine as well as routine qualitative analyses. It was found that there was an increase in

the basal metabolic rate of approximately 50 per cent without any concurrent change in blood pressure and pulse rate or temperature. At first there was a gradual increase in the non-protein nitrogen, urea nitrogen, and uric acid nitrogen, which again receded to normal as the treatment continued. Blood cholesterol and lactic acid

of weight, especially if the energy intake is augmented by supplemental feeding.

Within the limits of dosage employed, the drug is apparently harmless.

In dosages up to 4 mg per kilo, the drug is without significant effect on temperature, blood pressure, pulse pressure, or pulse rate.

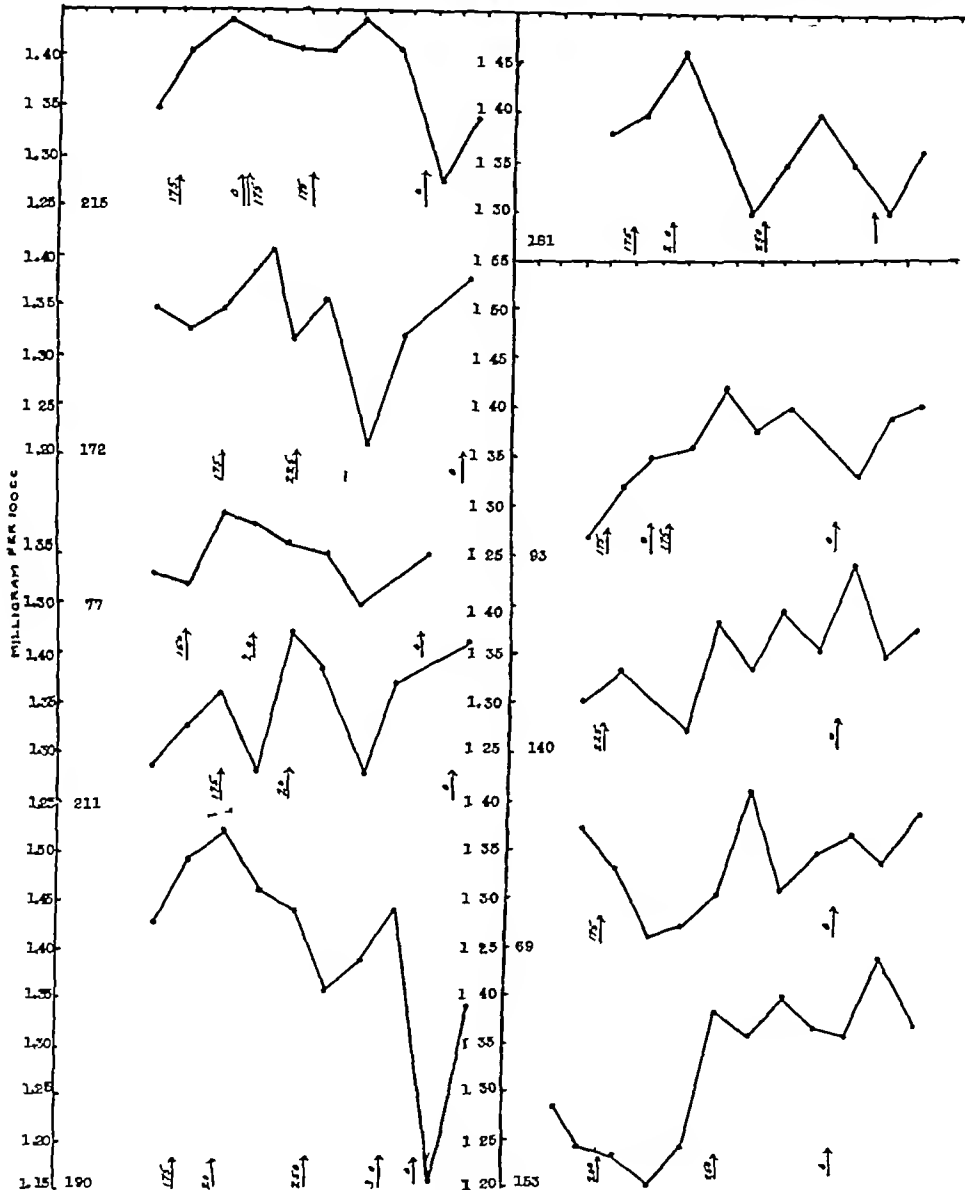


CHART VI
CREATININ (BLOOD)

Observations at irregular intervals. Number of days intervening being indicated by the distance on the horizontal axis (Each space represents five days)

showed considerable variation but no consistent trend. Patients lost about two to three kilograms in weight but no deleterious effects were noted.

CONCLUSION

Dinitrophenol can be used to increase the rate of oxygen consumption without great loss

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HYPERTROPHIC ARTHRITIS OF THE HIP*

A Review of Seventy-Nine Patients

BY JOHN O. KUHN'S, M.D.†

THIS study is based on a review of the histories and end-result examinations of seventy-nine patients who were treated for hypertrophic arthritis of the hip in the Robert Breck Brigham Hospital from the opening of its wards in 1914 until 1931. In this group there were 45 females and 34 males. This would suggest that more women suffer from this disability than men, which is contrary to the findings of others¹, but in the entire number of patients treated in the hospital for arthritis of all types during this period there were about twice as many women as men. The ages of the patients with hypertrophic arthritis of the hip at the time of admission to the hospital varied between 36 and 73 years, the average being 56. None of the cases studied were of the type occasionally described in young adults where osseous overgrowth occurs about the margins of one hip joint following severe trauma to the hip, a condition more properly called traumatic arthritis².

The histories of these seventy-nine patients gave interesting, suggestive data in regard to possible causative factors. It was suggested repeatedly that heredity played no part in the development of hypertrophic arthritis³ except in the inheritance of the type of body-build. Hypertrophic arthritis is more apt to attack individuals of the stocky type⁴. There were thirteen patients in this group, members of whose immediate families were afflicted with severe arthritis. But an incidence of this extent (15 per cent) is not high enough to establish any definite familial relationship.

Repeated injury and strain have been mentioned more often than other factors in the past as a cause of hypertrophic arthritis⁵. Trauma is frequently remembered but when described usually appears to have played no major part. In nine of the patients there had been a severe fall or blow upon the hip within several years of the development of the arthritic symptoms. Injury to joints from hard labor also has been considered of etiological importance⁶. In this group there were only fifteen persons engaged in work which could be considered laborious. Obesity has been known to produce

the symptoms of strain in various parts of the body. Twelve of the patients were much overweight, but half of the entire group were below what would be considered their normal weight.

One female patient, aged forty-seven, had an unreduced congenital dislocation of both hips with extensive hypertrophic arthritis in both hips. Posture, as has long been recognized, can alter weight-bearing lines and change the stability of joints such as the hip. In fifty-seven of the patients, all of the cases where mention was made of it the posture was described as poor. In the earlier records no mention was made of the posture. It seemed reasonable to assume that infections in early life which damaged articular tissues might leave such articulations more susceptible to later injury either infectious or mechanical. One man and two women in this number had suffered from rheumatic fever in childhood with involvement of the joints.

The importance of endocrine dysfunction in certain cases of hypertrophic arthritis is scarcely questioned⁷. The thyroid gland or the ovaries are usually considered at fault in such cases. Unfortunately very few basal metabolic tests were taken upon arthritic patients before 1924. In this series a persistently low basal metabolism was found in eighteen patients and a high basal metabolism was observed in three. In four women the arthritic symptoms developed at the climacteric⁸. No other studies on endocrine dysfunction were made except in rare instances.

A possible relationship of disordered intestinal function to hypertrophic arthritis has been mentioned⁹. As there is no unanimity of opinion as to what constitutes disordered intestinal function it is difficult to collect data from records. Unfortunately studies of the stool and tests for the rapidity of intestinal elimination were performed only in the later cases. In this group there were sixteen patients who gave a history of chronic constipation. Eighteen others showed colonic stasis of more than forty-eight hours upon x-ray examination¹⁰.

Among certain students of arthritis the hypertrophic form is still looked upon as an infectious rather than a degenerative process¹¹. Certain findings in the histories of these patients would suggest that infection played some part proba-

This paper is one of a series of studies made in connection with the Robert B. Brigham Hospital Survey of Chronic Disease.
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bly a secondary one, in the development of their disabilities. It could not be determined clinically and by x-ray whether in these particular cases the original process, hypertrophic arthritis, was wholly an infectious process, or whether the degeneration and trauma had made the articular tissues a more ready prey when infection entered the body. In recent years there has been a tendency to discount the effect of foci of infection in hypertrophic arthritis and the question is still sub judice. Dental infection was found in twenty-eight patients and chronic tonsillar infection was recorded in ten. No definite clinical improvement was observed after the removal of these infections. In seven other patients there was a distinct increase in the arthritic symptoms in the joints showing hypertrophic arthritis during the course of acute infections such as colds, tonsillitis and scarlet fever.

The laboratory data available in this series of patients were for the most part negative. The basal metabolic tests have already been discussed. There was secondary anemia in three patients. The blood counts in all of the others were within normal limits. Determination of the blood serum calcium and phosphorus showed nothing noteworthy. The tolerance for glucose gave the normal readings except where other physiological dysfunction was present as the cause. The blood sedimentation rate was within the normal readings except in the few cases already mentioned where the temperature and clinical course either showed or suggested an infectious process.¹² Hypertension has been commonly found by some observers in hypertrophic arthritis.¹³ In this group there were only ten patients with a systolic blood pressure persistently above 160 mm of mercury.

The x-rays in this series showed the usual findings, rather dense bone, with osseous proliferation about the upper margin of the acetabulum and upon the femoral head. In a few cases there were localized areas of rarefaction in the femoral head and localized areas of ossification about the acetabulum resembling osteophytes.¹⁴ The extent of the anatomical changes did not parallel the severity of the symptoms. No change was observed in the x-ray subsequent to treatment except that in lateral x-rays a decreased forward inclination of the pelvis was observed due to correction of posture and faulty weight-bearing. In a few patients later x-rays showed more extensive changes about the hip joint, usually associated with continuance or increase in severity of symptoms.

The treatment of these patients was wholly conservative, not from lack of competent surgical assistance or from extreme conservatism, but as an attempt to determine what would be the result with as good a regimen of health as could be devised at that time. The earlier cases, from 1914 to 1920, were treated with rest, a

little physiotherapy and local support to the hip, usually a plaster or a leather spica.¹⁵ The results in these early cases were not particularly good. They compare in functional rehabilitation and in relief of pain about equally well with the results of the various surgical procedures which were performed for hypertrophic arthritis, of which reports appeared in the literature during these years.¹⁶ From about 1920 onward came a fuller realization that one was not dealing with a localized disease in the hip alone and the results of treatment improved tremendously with prolonged and adequate rest, physiotherapy devised to correct so far as possible the mechanical inadequacies of the affected hip joints, including general postural exercises and local measures to increase motion and strengthen muscles about the hip itself, and whatever measures were indicated to improve the general health.

It has long been known that constant rest in a position in which there is no strain will usually relieve the muscle spasm and pain in hypertrophic arthritis quite promptly. In the later cases the patients were kept in bed for a prolonged period of time usually two weeks or longer, and the affected hip joint was kept in a position which least resisted the muscle spasm either by pillows and sandbags or with a plaster spica.¹⁷ Walking was not permitted until muscle spasm and pain were almost gone. Heat was used locally to improve the circulation about the hip and to produce muscular relaxation. Massage was used in only a few of the cases since nutrition and strength seemed to improve much more rapidly with supervised active use of the muscles than by the passive stimulation given through massage. The physiotherapy given was not primarily for local comfort but rather to correct the mechanical deficiencies of the body which resulted in strain and acted as aggravating factors in the hypertrophic arthritis. One of the chief factors found in association with poor posture was the markedly increased forward inclination of the pelvis. This, by increasing the lumbar lordosis and changing the pull of the flexor and extensor groups of muscles about the hip joint, decreased its stability and made strain a more constant factor. The thrust of weight and the carriage of the upper part of the body as well as any foot strain were also corrected.

The medical treatment and the general up building measures varied with the individual patient. In all an attempt was made to give a diet adequate in mineral constituents and vitamins, high enough in calories for the individual need, usually low in calories for the obese patients and moderately low in carbohydrates for all. Laxatives were used at first in most of the cases to secure more adequate intestinal elimination. In a few patients where intermittent swelling and pain occurred in various joints

where hypertrophic arthritis of the hip was present, in the presence of a slight persistent increase in temperature and an increased blood sedimentation rate vaccines were used usually after testing for skin reactions. There was appreciable clinical improvement in a small number of these patients after the use of vaccine.¹⁵

Among the early admissions there were many patients who were quite old. A large number of these have since died. Many of these were entirely relieved or much improved in regard to the disabilities in their hip joints for a long period before death.¹⁹ In none of these could any definite relationship be established between the cause of death and the hypertrophic arthritis. The patients died for the most part from the diseases commonly observed in the aged. There were twenty-three deaths in this group of patients. Table 1 gives the causes of death.

TABLE 1

Myocardial failure with various cardiac disturbances	4
Bronchopneumonia	3
Cerebral hemorrhage	2
Lobar pneumonia	2
Carcinoma of breast	2
Cause unknown	2
Diabetes	1
Angina pectoris	1
Syphilitic aortitis	1
Carcinoma of cervix	1
Gangrene of leg	1
Pernicious anemia	1
Miliary tuberculosis	1
Carcinoma of stomach	1

It is extremely difficult, in a disease so protean in its manifestations as arthritis, and in individuals who are past middle life, to give accurate end-result data. The advancement of various degenerative processes and intercurrent infections have in a number of instances obscured the functional improvement in the hip joint. The shifting economic status, and the mental unrest in many patients have made it difficult to maintain the improvement which was noted on discharge from the hospital. Most of the patients who are still living have been followed through the out-patient service. A small number have had subsequent admission to the wards due to a recrudescence of symptoms attributable to other diseases. Some of the patients have been helped in finding employment, or in securing better diet and living quarters through the Social Service Department. Table 2 gives a summary of the end-result study.

One hesitates to use the word "well" in these patients. They do not get well in the sense that there is a restoration of normal anatomic structure in the hip joint.²⁰ So far as we know the changes about the hip joint remain. From observations on other joints such as the fingers and knees we do know that the swelling of the soft parts about the joint often subsides permitting freer motion. In about half of those classified

as better a limp remained, but all pain had disappeared and they were able to walk without discomfort. Return of full range of motion at the hip joint following hypertrophic arthritis was observed only in the cases showing slight structural changes in the x-ray. In those listed as better but not working there were three aged

TABLE 2

	Men	Women
Working and better	5	9
Better not working	13	7
Condition the same	4	9
Worse	3	3
Not found	0	3
Died	9	14
	34	45

individuals, but the remainder had been unable to find work. We believe that further improvement might have resulted in some of the patients whose disability remained the same if it had been possible to obtain more prolonged hospitalization, more careful supervision at home, or better coöperation on the part of the patient.

Among the six patients listed as worse there were three men, one eighty years old with a recent fracture of the hip, one, an alcoholic of fifty-eight, and one, a man of fifty-six who had refused all medical aid since he had left the hospital. Of the three women, one sixty-three years old, had carcinoma of the breast, one, sixty-five, had severe myocarditis, and a third, a woman of seventy-two, showed progression of the hypertrophic arthritis with increase in the usual infirmities of age. Three patients, all women, could not be traced. Twenty-three, discussed before, had died.

The greater number of these patients had symptoms in other joints as well as in the hip joint. All of them showed multiple articular changes on x-ray examination. There were only twenty-one patients with symptoms limited practically entirely to the hip joint, a condition called *malum coxae senilis* in the older nomenclature of hypertrophic arthritis. The ages of these twenty-one patients ranged between forty-four and seventy-five, all but five were over sixty years of age. All of them had followed active, and for the most part strenuous, occupations. Nine were obese. Table 3 gives the end-result data in this special group. The end-results, as one would expect in this somewhat older group with often far more extensive changes in the hip joint, were less good than in the larger group of seventy-nine. Ten of the sixteen living patients had hip joints functioning so satisfactorily that they could walk without pain.

Conclusions drawn from the data gathered in the study of these seventy-nine patients must necessarily be of a general character since not

one form of therapy, but many, were used in an attempt to keep pace with the changing concepts in hypertrophic arthritis. For this reason comparisons cannot readily be made with earlier studies where but one form of therapy was applied for what was then considered to be a local disease of the hip joint. Then too, none of the early reports followed the patients for long periods of time, so that later changes were

to relieve the greater number of these individuals as this study shows

CONCLUSION

Hypertrophic arthritis of the hip was not found as a disease of the hip alone, other articulations and tissues showed changes on more complete examination. A study of the histories of the patients in this series suggested the interaction of both local and systemic etiologic factors, such as trauma, faulty posture, disordered intestinal function, infections and endocrine disturbances. Data of the end-results showed that progressive deterioration was not necessarily the usual course, even in the aged, when therapy and supervision were continued for a long period of time. Treatment which changed steadily with the increase in our knowledge of this condition was able to relieve the pain and disability in the majority of these patients.

REFERENCES

	Men	Women
Improved	6	4
Condition the same	2	2
Worse	1	1
Dead	1	1
Not found	1	1
	11	10

not usually observed and no attempt was made to evaluate the quiescent arthritic disabilities in the presence of the infirmities of old age.

When the etiology of hypertrophic arthritis is definitely established, perhaps our treatment of its disabilities in the hip joint, as well as in other joints, will be more rapid and certain. Our present clinical and pathological studies suggest a multiple etiology²⁰ with structural changes which seem to partake more of a degenerative²¹ than of an infectious process. We must believe that infections play some part in the disease in certain individuals, but in the patients studied this seemed to become evident only after the disease was well established. While lesions similar to hypertrophic arthritis have been produced by interference with the circulation to joints, we cannot establish a definite relationship between local circulatory changes and hypertrophic arthritis²². Articular lesions, either surgical or from external trauma²³, have produced somewhat similar changes. But here again our evidence is not conclusive. Again, what rôle the endocrine glands, or their involution, play in the development of this disease is still conjectural²⁴.

With the development of these suggestions of the causes of hypertrophic arthritis it is not strange that therapy which in the past was almost wholly local and often surgical²⁵, in those advanced cases which came for treatment, has become general and for the most part conservative. Surgery, as Brackett²⁶ stated almost two decades ago, has a very limited application in hypertrophic arthritis and that only in the exceptional case. Further progress should give us new help. With our present knowledge, which we must admit is inadequate, we are able

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A CASE OF MULTIPLE CONGENITAL ANOMALIES OF
THE MULLERIAN AND GENITO-URINARY SYSTEMS
WITH ABSENCE OF THE COCCYX*

BY JOHN L. NEWELL, M.D.†

THE reasons for reporting this case are two-fold first, it represents a rare developmental anomaly of the Müllerian system associated with multiple other anomalies, secondly, the symptomatology is exactly explained by the operative findings

The patient, a 26 year-old nulliparous housewife was referred to the Free Hospital for Women in May, 1933 because of fecal incontinence. On admission the complaints were inability to control escape of gas and feces and pain in the lower right side of the abdomen. The fecal incontinence had been present since birth. The pain was first noticed soon after the menarche as an inconstant dull ache. During the next ten years it was never of sufficient intensity to interfere with routine activities but it had been definitely more severe since marriage. For ten months prior to entry the pain had been sharper and on occasions cramplike lasting two to three minutes. These attacks of cramplike pain had a clear relation to the catamenia beginning the day before and lasting throughout the period.

On physical examination the patient was a well developed and well nourished female. The head, neck, chest, extremities and reflexes were normal. The abdomen was soft but there was distinct localized tenderness in the right lower quadrant. No masses were felt. Pelvic examination disclosed a thin rectovaginal septum and complete absence of the perineal body. The anal orifice was relaxed and no sphincter action could be elicited. The vulva and vagina were otherwise normal. The cervix was small as was the fundus which was in left lateral version and in the second degree of retroversion. Nothing could be felt in the right side of the pelvis.

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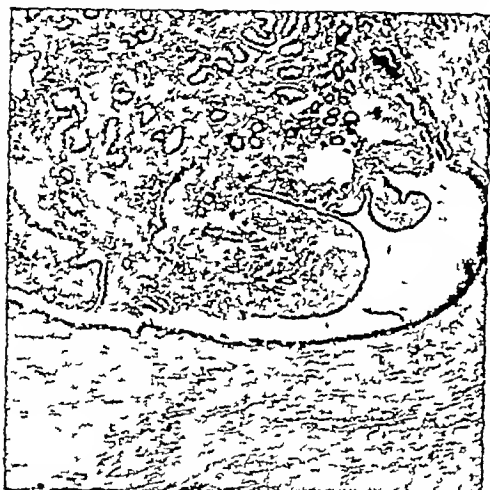
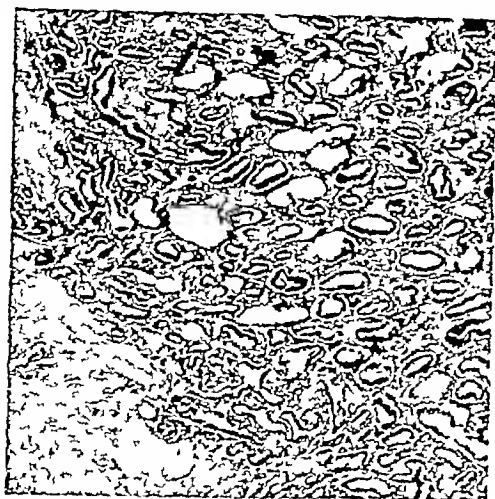
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In the pelvis was a fully developed spindle shaped uterus unicornis, in anterior position, and held in left lateral version by its round ligament, with a normal tube and ovary. The sigmoid and rectum

The patient made an uneventful convalescence. Since her discharge she has been completely free of pain and has thus far had six catamenia, regular in time and amount of flow.



Photomicrographs of sections from the rudimentary uterus. There is some premenstrual proliferation of some of the glands. The dense stroma and the hyperplasia of other glands indicate dysfunction. Magnification 32 X.

filled the right side of the pelvis. No trace of old blood or of endometriosis could be found. A right hemihysterectomy with salpingo-oophorectomy and incidental appendectomy were performed.

On section the uterus had a cavity of 1.5 cm in diameter, which was filled entirely with endometrium, no blood being visible grossly. A pin hole opening communicating with the tube was the only channel to the peritoneal cavity. The tube was normal except for the four accessory ostia. Microscopically a section of the endometrium was moderately hyperplastic and contained only one small area of hemorrhage. The tube and ovary were normal. If the rudimentary uterus menstruated, and the appearance of the endometrium, together with the story of monthly attacks of pain would lead one to assume that it did, the menstrual blood must have passed into the peritoneal cavity via the tube. Careful examination at operation failed to disclose endometriosis or old blood. As there was no hematometra and the ultimate fate of the menstrual blood was not discovered, one would be led to conclude that the uterus did not menstruate and that the pain must have been due to local congestion.

Although a careful search of the literature of the past ten years has been made, only one case in any way comparable with this case was found, viz., that reported by Hart in 1931 in which the rudimentary uterus lay in the broad ligament of the fully developed uterus, no other anomalies being present. In the case herein reported not only was there imperfect development of the right Müllerian duct but also the rudimentary uterus was outside of the true pelvis and had no connection whatsoever with the organs of the left Müllerian duct. Furthermore, the right kidney and ureter, perineal body, anal sphincter and coccyx were absent and there was an anomalous band of peritoneum including the right round ligament and obliterated hypogastric artery.

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REPAIR OF ORBICULAR LIGAMENT AT THE ELBOW

BY FREDERIC JAY COTTON, M.D.,* AND GORDON MACKAY MORRISON, M.D.*

NOT very rarely the radial head is torn loose with rupture of the orbicular ligament. This may repair sufficiently well, with the elbow held during repair in flexion, but that is not the rule. Ordinarily, the radial head becomes or remains loose and is pulled upward by the biceps, the tendon of which is inserted on the radial tubercle just below the radial neck. Such cases call for repair.

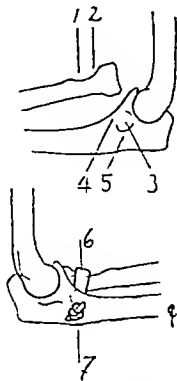
*Cotton and Morrison—For records and addresses of authors see page 817 issue of April 12, 1934.

Access to the region is easy if one sticks to the interval between supinator longus and biceps above, identifies the radial nerve and retracts it outward with the supinator. The biceps tendon is the guide to the radial neck under which lie the torn remnants of the orbicular ligament. With good luck, even after a number of weeks, one may unroll ends of the broken ligament sufficiently to suture with chromic gut. If so, good. If there is not enough left of the ligament to joint the torn ends, various operations have

been tried, apparently without consistent results

Therefore, a case some years ago forced the contriving of a better way. It proved not only efficient, but so simple as to deserve recording.

The wound of entry was as noted above. The lesion was old, and there was no discoverable remnant of ligament.



ORBICULAR LIGAMENT

Upper figure—View from outer side of elbow

1 2 The neck of the radius about which the orbicular ligament should fit

3 The lesser sigmoid cavity against which the radial head should rotate

4 5 The site of the drill holes on the radial (outer) side of the ulna

Lower figure—Elbow from inner side

6 The artificial (fascial) ligament

7 The knot tied in the ends of the fascia where they emerge from the bone. Knot secured with silk sutures

The dotted lines indicate the course of the two ends of the fascial strip through the bone to the common hole of exit where the ends of the strip are knotted.

The radial head was readily reducible. An accessory incision was then made just to the inner side of the presenting point of the ulna. The flexor muscle was stripped away from the inner side of the ulna for a space. Then from

the anterior incision a heavy drill was set on one side of the radial neck, entering as near as might be, one edge of the lesser sigmoid cavity, driven through the ulna to the inner surface against a retractor blade between the ulna and the muscle. The drill, withdrawn, was reinserted on the other side of the radial neck, and so directed as to emerge through the same point of exit from the bone as before.

The ends of a stout strip of fascia from the thigh passed across the radial neck were then passed down on either side of the radial neck, both emerging through the same hole (widened a bit with the curette). The fascia ends, pulled on, dragged the radial head into place. They were then tied in a knot which jammed tight in the hole of exit in the tying. The square knot was then completed, the knot caught with a chromic gut stitch in the usual way, the flexor muscle pulled back to cover it, and the wounds closed.

The boy was then 11 years old. Reexamination March 27, 1934. He is 15 years old and has a perfectly useful arm, normally developed. There is, however, some limitation of supination. Other motions were free. X-ray shows head of radius slightly distorted, apparently influenced by the pull of the encircling ligament, and the head lies a little forward, not in normal contact with its bed on the ulna. Ossification is evident and about the ligament traversing the ulna. All epiphyses are already solidly merged with the shafts.

This operation proved very simple, and very satisfactory.

We have had no chance to repeat it, oddly enough.

It is here presented as probably the simplest efficient technique, to date.

MEDICAL PROGRESS

PROGRESS IN PROCTOLOGY

BY E. PARKER HAYDEN, M.D.*

FROM a rather large number of papers on subjects pertaining to the colon and rectum, the following have been selected for review, as representing points of interest or advance in the study of this field of medicine.

HEMORRHOIDS

There are two facts with regard to the treatment of internal hemorrhoids which are not generally appreciated.

The first is this: that the clamp and cautery operation has been abandoned by almost all, if not all, of the men specializing in rectal surgery.

Hayden—Surgeon to Out Patients and Chief of Rectal Clinic, Massachusetts General Hospital. For record and address of author see "This Week's Issue" page 1234.

in this country. Excision and ligation procedures have supplanted the cautery method because of certain definite advantages which they possess, i.e., more accurate removal of the piles, better hemostasis, freedom from the added trauma of burning, a more comfortable convalescence.

The second fact is that the treatment of internal hemorrhoids by the injection of sclerosing solutions, although definitely not so permanently curative as an operation well done, is nevertheless a very prompt and efficient method of relieving the symptoms which internal hemorrhoids produce, bleeding and protrusions. The degree of permanency of the result varies with

the size of the piles treated and the number and strength of the treatments given

Fansler¹ describes a new plastic operation intended to be used in cases of prolapsed, thrombosed internal piles with perianal edema and thrombosis all around the anal outlet. It is based on the old Whitehead operation but is designed to avoid the chief objections to the Whitehead, that is, stricture and subsequent mucous membrane protrusion. Fansler incises each hemorrhoid at the junction of squamous and columnar epithelium, dissects a flap back to the outside skin, and excises all the underlying varices and thromboses, including removal of the internal pile up to normal mucous membrane above. The flaps thus created and which are attached externally, are sutured to mucous membrane, thus relining the anal canal. Healing has taken place without incident except in one case in which one flap failed to unite and had to be excised.

In view of increasing interest, on the part of medical men throughout the country, in the injection treatment of hemorrhoids and of prolapse of the rectal mucosa, a study by Rosser and Wallace² is timely. This investigation is a sequel to that reported by Rosser in 1931 on "Chemical Rectal Stricture" from the use of oil injection solutions.

In twenty cases with rectal occlusion from submucosal tumefactions, biopsy was secured in eight, and disclosed the swellings to be foreign body granulomas from unabsorbed oil.

Twenty-four experimental injections were then carried out in human beings and biopsy was done in all cases at varying intervals. Three oils were used, olive, mineral, and cottonseed. In six cases injected with olive oil, the rate of absorption was quite rapid, and tumor formation did not occur. The biopsies were performed in from one minute to two months after injection. Mineral oil was used in five cases, all of which developed tumefactions. Cottonseed oil was injected in thirteen cases with biopsy in from three days to ten months. Tumors did occur, but not always, and seemed to depend on the amount of oil used. Addition of phenol to the oil in certain instances seemed to make no difference in the result except that slough occurred in strengths of over ten per cent.

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The lesson from these experiments would seem to be clear, to stick to olive oil solutions or to non-oily injection solutions such as quinine and urea hydrochloride.

PROLAPSE

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FISTULA

Chisholm⁵ sketches the views of various German authors on the etiology of anal fistula. Five are quoted as believing tuberculosis to be the basis of half or more of the cases, while one author found it in only 6.9 per cent or seventy-two cases by macroscopic and microscopic examination. Petter and Fansler, from a study of 101 cases of abscess and fistula in a tuberculosis sanatorium, concluded that tuberculous fistulae are nearly always secondary to a lesion elsewhere. These 101 cases comprised 5.8 per cent of the total patients examined. A reliable proof of tuberculosis consists in (1) exudate in guinea pig, (2) macerated tissue in guinea pig, (3) tissue section.

Several other contributions are reviewed, all of which give greater or less prominence to the factor of tuberculosis in association with fistula.

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maunder, eighteen had pulmonary tuberculosis in the arrested stage and in thirty-one it was active. None were last stage cases. In the investigation specially raised non-tuberculous guinea pigs were used. His results were as follows:

1. In the thirty-one active cases the tubercle bacillus was isolated from the fistula by culture and guinea pig in twenty-four cases. Only one of these had a typical pathologic picture.

2. Of the eighteen arrested cases the bacilli were present in ten by culture and guinea pig, and three showed, histologically, giant cells and tubercles.

3. In the 106 cases clinically and roentgenologically negative none showed tuberculosis by culture or guinea pig.

4. Acid fast bacilli are rarely found in smears of the fistula exudate.

Hayden^a analyzed 388 cases of anal fistula admitted to the Massachusetts General Hospital in the years 1921 to 1930, and secured end results in 280 cases. A rate of cure of 92 per cent in complete incision and drainage operations contrasted with only 50 per cent of cures in the cases operated in other ways. There were three times as many males as females in the series. Two thirds of the patients had delayed from six months to eighteen years before coming to the hospital. Multiple internal openings of a single fistula occurred in three cases and there were four cases of double fistula. Tuberculosis of the fistulous tract was established in only two out of eighty-one cases in which a pathological examination of the fistulous tracts had been done. There were thirty-four patients, however, who had had tuberculosis in one form or another. Also of the thirty-seven patients who had died since their hospital admission, fifteen died of tuberculosis.

The difficulty of establishing the presence of tuberculosis in a fistulous tract merely by tissue section microscopic examination is well known, and it is undoubtedly true that all three methods of diagnosis as listed by Chisholm, should be used. I am convinced, however, that the incidence of tuberculous fistula, except in individuals with active tuberculosis elsewhere in the body, is extremely low.

STRICTURE

The "ano-rectal syndrome" of lymphogranuloma inguinale (the fourth venereal disease).

Lymphogranuloma inguinale (climatic bubo) has long been a familiar disease in the tropics, and a recognized clinical entity with subacute and chronic inguinal adenitis suppuration and sinus formation. The disease is acquired through intercourse presumably due to a specific filtrable virus with an insignificant and often unnoticed, primary lesion on the genitalia.

Glandular swelling occurs in from ten days to three weeks after exposure. Considerable attention has been directed recently toward the *ano-rectal manifestations* of this disease, though these were described in 1848 by Huguier.

DeWolf and Van Cleve^b have summarized our present knowledge of the disease and have reported on their experimental work at Cleveland City Hospital. In 1925 Wilhelm Frei published his specific test for the disease: an intradermal inoculation of sterilized pus from the inguinal glands, giving a characteristic erythema and papule in persons who have, or have had, the disease. DeWolf and Van Cleve applied this test to 1010 people with fifty-eight positive results, using antigens prepared from eleven of these patients. Of the fifty-eight, thirty-one had active adenitis when studied, four had been treated for the disease two to four and one half years before the period of the study; twenty gave a history of persistent inguinal adenitis some time in the past twenty-five years and three had anorectal disease without any evidence or history of inguinal adenitis. One of these three cases did have cerebrospinal syphilis, the other two were negative. The Frei test was strongly positive in all.

The authors recommend investigation of all rectal strictures from this standpoint.

Cole^c has published more recently an article dealing especially with the relation of this disease to rectal stricture. Females are more prone to rectal involvement than males and less likely to have inguinal enlargement due to the free lymphatic drainage distribution of the vagina to the perirectal nodes. There may develop an extensive multiple fistulous involvement of vulva, perineum, and rectum with elephantiasis of the tissues and often a stricture of the lower rectum. This condition was formerly known as the "ano-rectal syphiloma of Fournier" following Fournier's description of it in 1875, but is not due to syphilis as Fournier thought. The advent of the Frei test made it possible to definitely establish the nature of these cases and has proved them to be an ano-rectal manifestation of lymphogranuloma inguinale. Cole reports fifteen cases with ano-rectal involvement in the past year, thirteen females and two males, twelve Negroes and three whites. All had positive Frei tests. Two of the female Negroes had extensive fistulous involvement of the vulva and perianal region, the *esthiomene* of French writers. An acute proctitis with resultant stricture formation occurs and cauliflower-like indurated lesions of the immediate perianal region often develop. Cole has collected in addition thirty-seven cases of inguinal adenitis with positive Frei tests in the past year.

Microscopically this tissue and the sections of the glands exhibit the characteristics of a gran-

the size of the piles treated and the number and strength of the treatments given

Fansler¹ describes a new plastic operation intended to be used in cases of prolapsed, thrombosed internal piles with perianal edema and thrombosis all around the anal outlet. It is based on the old Whitehead operation but is designed to avoid the chief objections to the Whitehead, that is, stricture and subsequent mucous membrane protrusion. Fansler incises each hemorrhoid at the junction of squamous and columnar epithelium, dissects a flap back to the outside skin, and excises all the underlying varices and thromboses, including removal of the internal pile up to normal mucous membrane above. The flaps thus created and which are attached externally, are sutured to mucous membrane, thus relining the anal canal. Healing has taken place without incident except in one case in which one flap failed to unite and had to be excised.

In view of increasing interest, on the part of medical men throughout the country, in the injection treatment of hemorrhoids and of prolapse of the rectal mucosa, a study by Rosser and Wallace² is timely. This investigation is a sequel to that reported by Rosser in 1931 on "Chemical Rectal Stricture" from the use of oil injection solutions.

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UNUSUAL TUMORS

Rankin and Larson¹⁴ report four cases of mesosarcoma of the rectum, a rather rare tumor. All four patients were men in the fifth and sixth decades. The chief symptoms were constipation, straining at stool, and urinary difficulties. These tumors lie close to the internal sphincter, involve the mucous membrane only late in the disease, are slow growing, metastasize late, but show a marked tendency to local recurrence.

Marino¹⁵ describes a case of primary melanoma of the rectum. It occurred at the anal outlet, was 2x3 cm. in size, and resembled a thrombosed gangrenous hemorrhoid. Although a wide local excision was performed, groin metastases had already taken place, were observed six months later, and the patient died about a year after the operation. There was no local recurrence.

CARCINOMA

Lahev¹⁶ has applied with success the so-called Mikulicz method of closure to resections of the cecum and ascending colon. This method with modifications has been in use quite generally in resections of the left colon for many years and has undoubtedly been a large factor in the reduction of mortality from peritonitis following left colon resections. In the right colon where anastomosis following resection has to be performed between the ileum and transverse colon, this method has never been emphasized if indeed it has been described at all. Lahev resects with clamps and cautery, then brings the ileum and transverse colon out of the incision together, leaving clamps on the ends. If desirable to immediately open the ileum because of preoperative obstruction, he "staggers" the ileum, allowing it to protrude several inches beyond the colon end and then ties a Mixer tube in the ileum. The cut end of the ileum with its tube can thus be laid over on the abdomen beyond the incision, reducing chance of

contamination of the incision. Later the excess ileum is cut away to the level of the colon end, and the intervening spur clamped in seven to ten days. Closure of the two bowel ends is accomplished extraperitoneally in four to six weeks, with drainage of the subfascial space.

There would seem to be little doubt that this procedure is safer than any of the others used in resections of the cecum and ascending colon, although the mortality with preliminary ileocolostomy and secondary resections is also low. The method described by Lahev has the added advantage of removal of the growth at the first operation.

Raiford¹⁷ has analyzed twenty-two cases of carcinoma of the transverse colon which comprised 73 per cent of 297 cases of carcinoma of the entire colon and rectum. At operation 27 per cent of the twenty-two cases showed liver involvement and in 32 per cent the stomach was involved in the growth, either by omental lymphatic channels or by contiguity. Glands were involved in only five cases.

Eighteen cases were radically operated with six postoperative deaths—33 1/3 per cent mortality. Of these two developed peritonitis, two pneumonia, one embolism, and one shock. There were three five-year cures, three cures under five years, two died of recurrence, and four were untraced.

Operative procedures were sketched and the twenty-two case reports presented. Of interest was the presence of achlorhydria in the majority of cases.

Rankin and Olson¹⁸ reviewed 453 cases of carcinoma of the colon operated upon at the Mayo Clinic in the years 1907 to 1927, and attempted to evaluate factors contributing to the prognosis. Lesions of the rectum and rectosigmoid were not included. The size of the lesion at time of operation averaged about the same in the five-year cures as in the dead cases. The five-year cure rate in the right colon was 57.6 per cent as compared with 47.7 per cent in the left colon. Those cases in which the dominant direction of growth was toward the lumen of the bowel yielded 62 per cent of five-year cures as against 41 per cent in the cases where the direction of growth was mainly toward the serosa. As would be expected, the cases without involvement of neighboring glands showed a much higher five-year cure rate than those with metastases.

The degree of malignancy according to Broders' grading was the greatest factor in the prognosis. Both the five-year cure rate and the average postoperative life were greatest in the Grade I cases, becoming progressively less down to the Grade IV's. Nodal involvement became increasingly frequent from Grade I to Grade IV.

Emphasis was laid on the value of decompression.

uloma and are easily confused with the picture of tuberculosis and syphilis.

Treatment is not very satisfactory, though cases with adenitis have been cured by extirpation of the affected glands. On the other hand this may produce elephantiasis of the leg. Suppurating nodes should be drained. Various drugs have been tried without any convincing results. Cole advises rest in bed, free drainage, perhaps partial extirpation of nodes, and antimony and potassium tartrate intravenously. When the process is advanced, with rectal stricture, etc., no therapy can be expected to accomplish a great deal.

Martin⁹ reports a study of twenty-five cases of rectal stricture in female Negroes. Application of the Frei test resulted in a positive diagnosis of lymphogranuloma inguinale in twenty cases, a very impressive result.

David and Lauer¹⁰ have analyzed 104 cases of rectal stricture, seen at Cook County Hospital and in private practice. Nineteen were congenital and the remainder acquired. Of the acquired strictures, twenty-two were due to postoperative scarring following a variety of procedures, while thirty-three were the result of inflammatory processes of different types. Four of these were gonorrheal and three were due to *hyperplastic tuberculosis*. The latter fact is of considerable interest, since this disease occurs so much more commonly in the cecum. Eleven cases were due to tumors of the rectum and sixteen to extrarectal tumors, primary or metastatic. The remaining three cases in the series were the result of perirectal inflammatory processes, one of which was associated with Hodgkin's disease.

Among the thirty-three inflammatory strictures the authors grouped twelve as "venereal strictures ? syphilis." About 50 per cent of these had positive Wassermann reactions but none responded to antisyphilitic treatment. Sulzberger, in a subsequent communication in the J A M A suggests that these twelve cases are probably examples of lymphogranuloma inguinale, and might be so established by application of the Frei test.

HYPERPLASTIC TUBERCULOSIS OF THE COLON

Rankin and Major¹¹ report, from the Mayo Clinic, sixty-five cases of hyperplastic tuberculosis of the large bowel, emphasizing that this form of tuberculosis is largely a surgical problem whereas tuberculous colitis is entirely a medical one. They quote statistics of Park and Krumweide to the effect that in 59 per cent of cases under the age of five the bovine bacillus is the infecting agent. This is true in 46 per cent of cases from ages five to sixteen, and in 22 per cent of adults. The series of sixty-five cases here reported embraced thirty-seven males and twenty-eight females. There were twenty-three cases between ages twenty-one and thirty, and the incidence diminished to only two cases be-

tween sixty and seventy. One case occurred in each of the first two decades. Pain and loss of weight were prominent in 91 per cent of the cases, obstructive symptoms and diarrhea being also quite common symptoms.

Ileocolostomy was done in thirteen cases without mortality, but six died of pulmonary tuberculosis in the first year. Six others were only partially improved, leaving one case as a three year cure.

Resection with ileocolostomy was performed in fifty cases. Four died in the first month, five in the first year (four of these had extensive generalized tuberculosis), four in the second year (one of these had extensive pulmonary disease), and one died six years later of recurrent disease in the intestine. Twelve cases were followed and found to be alive, but their condition was not definitely ascertained. Of the remaining twenty-four cases, one showed no improvement, two moderate gain, and seventeen were entirely well from three months to ten years.

These statistics lead the authors to the definite conclusion that resection with anastomosis is the operation of choice in hyperplastic tuberculosis of the large bowel.

ACTINOMYCOSIS

Bensaude¹² has collected from the literature twenty cases of actinomycosis primary in the anus and rectum. The lesion is essentially a perirectal thickening with abscess formation and without involvement of the mucous membrane except in the late stage of the disease when fistulae develop. Diagnosis is made from the characteristic yellow granules in the pus, as in actinomycosis elsewhere. Inguinal adenopathy is uncommon. Only one case of the twenty was cured, death in the others being caused by local spread of infection and amyloid degeneration of parenchymatous organs, with or without septicemia. Wide surgical excision is advised, if possible, otherwise simple drainage is used, augmented by the use of iodides.

RELIEF OF INTRACTABLE PAIN

A study by L. Elaut¹³ of Ghent, Belgium, based on fifty anatomic dissections, should be of great interest to anyone concerned with the relief of pain in advanced and inoperable rectal cancer. Elaut demonstrated the fact that often there does not exist a definite presacral nerve but rather a plexus which follows one of several general conformations. He prefers to use the term "superior hypogastric plexus", as the plexus lies not in front of the sacrum but higher up in the lower prelumbar region, in the so-called "interiliac trigone", an inverted triangle whose base is a line across the sacral promontory and whose apex is the aortic bifurcation above. The plexus is spread out over 2 to 3 cm, above the sacral promontory. In only twelve of the

fifty cases was there found a definite single nerve trunk and then only for a distance of 1 to 2 cm. Eight cases had several parallel fibers; twenty-nine had typical plexuses, and one had an arch-shaped plexus. In about one-third of the fifty cases the fibres lay entirely over the left half of the interiliac trigone. These nerve trunks do not adhere to the peritoneum, in contrast to the ureters which are adherent, a practical point of value in dissecting this region. The plexus in every case terminates in the two hypogastric nerves which are always separate at the promontory.

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sion of the colon and rehabilitation of the patient in lowering operative mortality. The average mortality of right and left colon operations at the Mayo Clinic in the past two or three years has been about 10 per cent.

Shedden¹⁹ has collected from the literature thirty-six cases of cancer of the rectum and sigmoid in individuals under twenty years of age, and twenty-four cases between the ages twenty and thirty-five. Two cases were nine years of age. The thirty-six cases included seventeen reported by Phifer and twelve by Bernoulli, together with six other scattered ones, one of which was a Massachusetts General Hospital case. Of interest was the fact that in these young people abdominal symptoms were more prominent than the classical rectal ones, abdominal pain being most prominent. In general, the younger the patient the higher the degree of malignancy. A further analysis of the cases from various standpoints was carried out, and radical operation advocated in these as in adult cases, whenever possible. Biopsy for diagnosis is always advisable.

Gordon-Watson²⁰, reviewing his experience of 200 applications of radium for carcinoma of the rectum and anus, over a seven-year period, concluded that radium may be of some use in rendering operable an otherwise inoperable growth within the rectum, but that a radical operation should be performed whenever there is a reasonable chance of success. In localized epithelioma of the anus he feels that radium treatment has a definite place. The general feeling among men doing this work in our locality is that the degree and duration of pain from radium treatment of lesions in close proximity to the anal sphincter is so great that it has been abandoned in favor of surgical removal.

PECTENOSIS

Abel²¹ gives a detailed and interesting sketch of the anatomy and physiology of the anal canal with particular reference to the small area lying between the true skin and the mucous membrane, and known as the pecten. This area is covered with transitional epithelium, and is the level at which there occurs, in some people, a progressive subepithelial fibrosis which produces a narrow "wedding ring" contraction known as a pecten band, and creates a condition to which the term pectenosis was first applied by W E Miles in 1918. This condition may exist alone, as a progressive contraction, but is often associated with fissure. The operation of pectenotomy consists in dividing this band in the right posterior quadrant, a procedure destined to provide relief of the resulting obstinate constipation, and to bring about healing of a fissure if present. For some reason the band does not seem to reform, as one would expect. The end result of the operation is a very normal anal outlet and a return of normal defecation.

AMEBIASIS

Interest in this disease has received new stimulus as a result of the epidemic in Chicago during the summer of 1933, and as would be expected there have appeared various reports of cases in scattered localities as an aftermath of this epidemic.

Bundesen, Rawlings, and Fishbein²² described the Chicago situation with a report of 185 cases, nineteen deaths, and 193 carriers of *Endamoeba histolytica* detected from August to November, 1933. They emphasize the mildness of symptomatology in some cases, the persistence of the amoebae for long periods of time in carriers, necessitating careful isolation and repeated routine check-ups by stool culture. Organisms may disappear only to reappear after some months. Two of the carriers had been proved as such in a previous epidemic in 1927. The authors also point out that the disease is present constantly even in the more northern zones, as shown by a survey in 1929 by Williams and Geiger who found twenty-seven carriers and two active infections among 148 food handlers studied.

A comprehensive review²³ of the disease in respect to etiology, symptoms, and diagnosis and treatment appeared in the same number of the J A M A.

Charles C Lund²⁴ reported four fatal cases among a group of six lumbermen who were members of a committee at a convention in Chicago. In only one was specific therapy given and even then the diagnosis was made too late to prevent a fatal issue. All lived in different parts of the country. Two were operated upon with a diagnosis of appendicitis.

A fatal case was reported by Scannell²⁵ from Boston, operated upon with x-ray diagnosis of carcinoma of colon.

McKittrick²⁶ reported a case with liver abscess diagnosed by him about six months after exposure to infection in Chicago, and previously operated upon elsewhere with drainage of a subphrenic abscess of undetermined origin.

Ikeda²⁷ presents careful observations on nine cases picked up in one hospital in St Paul, and all traceable to Chicago. He emphasizes the variety of symptoms and difficulty of laboratory diagnosis.

VENEREAL INFECTIONS

Rosser²⁸ has discussed this subject in a concise but thorough manner. He finds primary chancre of the anus rather uncommon, but has seen three cases, shallow ulcers at the anal margin, one with condylomata overgrowing it. He quotes Martin as having reported twenty proved cases. Mucous patches do occur in the rectum in secondary syphilis, but tertiary lesions are quite uncommon. Chancroid occurs with reasonable frequency, usually as multiple lesions. Rosser had seen ten cases since 1925. Gonorrhea is

quite common, especially in the female, and is prolonged as a cryptitis. Irrigations as in urethritis, and ablation of the crypts after the acute stage, will usually clear up the infection.

CHRONIC ULCERATIVE COLITIS

The etiology of idiopathic or chronic ulcerative colitis is still decidedly unsettled. Borgen with Buie²⁹, presents further evidence in support of his conviction that the diplostreptococcus described by him several years ago is a factor in the production of most cases of this disease. His figures and methods are impressive. He reports the isolation of 815 strains of the organism from 1100 patients with the disease. Into 1000 rabbits were injected 500 strains producing lesions resembling the disease in man in 65 per cent of the rabbits. He has isolated the organism from blood culture in eight patients who were seriously ill with the disease. In addition, the organism has been recovered from periapical dental abscesses in 148 of the patients and injected into rabbits in each instance, reproducing the disease in 75 per cent of the animals. Further experiments of similar nature are outlined together with a detailed description of the protoscopic and microscopic picture at different stages in the disease.

Paulson³⁰ strenuously challenges Borgen's work on the basis of bacteriological criteria. He feels that Borgen's diplococci are not a definite organism but rather a phase in the development of many types of chain streptococci. In brief, Paulson feels that the disease is still "idiopathic," that *B. dysenteriae* may play a part in the etiology, and that the cocci in the colon probably are concerned in secondary infection of the ulcers. He emphasizes the inevitable recurrences in most cases, under any mode of treatment, the lack of any specific therapy, and urges that ileostomy, when indicated, be performed earlier than is often the custom. Primarily, however, the disease is a problem for careful medical treatment.

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CASE RECORDS of the MASSACHUSETTS GENERAL HOSPITAL

ANTE MORTEM AND POST MORTEM RECORDS AS USED
IN WEEKLY CLINICAL PATHOLOGIC EXERCISES

EDITED BY RICHARD C CABOT, M.D.

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CASE 20231

PRESENTATION OF CASE

A sixty-eight year old New England farmer entered the hospital complaining of swelling of both legs and indigestion of ten days' duration.

The patient had been well until a year before admission, when he gradually began to lose weight in spite of a good appetite and restful sleep. Five weeks before entry he noticed gradual development of diarrhea associated with severe abdominal cramps. He had about eight bowel movements on the first day. The diarrhea was not watery but merely soft unformed light-colored stools. There was no blood or mucus. With the onset of the diarrhea he suddenly became aware of the fact that his eyes and skin were yellow. This color did not increase in intensity and was not associated with itching. At the same time he noticed that his urine was mahogany colored. About ten days before entry a physician gave him some pills and other medicines which stopped his diarrhea and changed the color of his stools from a very light color to dark purplish black. At that time he began to have "stomach trouble" characterized by constant fullness in his stomach and vomiting every night. The vomitus consisted of recently eaten food but no blood. The color was that of grape juice and had no relation to the type of food. He vomited about five times the night before admission. With the onset of fullness in his stomach he noticed swelling of his legs, more on the left than the right. The swelling gradually rose toward the knees and for the past three days had reached the hips and abdomen. There was no swelling of the arms or face. For the past three or four days he had had hiccups. He had lost about thirty pounds in the past year. His strength had been very good. He had been working until six days before entry. X-rays had been taken by his physician three weeks before entry and were negative.

His past, family and marital histories are all negative.

Physical examination showed an emaciated man with marked jaundice of the skin and sclerae. There were many small purpuric spots over the abdomen and legs. The heart was slightly enlarged to the left. The sounds were

of fair quality. There was a soft systolic murmur at the apex and a harsh systolic murmur along the left border of the sternum. There was an occasional extrasystole. The blood pressure was 140/75. The lungs were resonant and contained many coarse râles scattered over both chests. The abdomen was markedly distended and tense. There was dullness in the flanks and low in the abdomen, elsewhere the abdomen was very tympanitic. The liver edge was palpable at the level of the umbilicus and very slightly tender. Because of the distention it was impossible to determine the presence or absence of irregularities. The spleen was not felt. There was marked edema of the feet, legs, genitalia, lower abdominal wall and lower back.

The temperature was 99.1°, the pulse 86, the respiration 28.

Examination of the urine showed a specific gravity of 1.016. There was a very slight trace of albumin and a four plus bile test. There were occasional hyaline and granular casts and a very rare white blood cell and red blood cell. The blood showed a red cell count of 4,000,000, a hemoglobin of 70 per cent, a white cell count of 26,000, with 94 per cent polymorphonuclears. The stools were soft, formed, brown, alkaline, and showed a four plus guaiac and a positive bile test. The Hinton test was negative. The icteric index was approximately 75, the van den Bergh 13.4 milligrams.

A gastro-intestinal series was done with considerable difficulty due to the weakened condition of the patient and the presence of ascites and fluid in the chest. During the examination of the esophagus, stomach and duodenum, the esophagus was never emptied of barium, apparently because of reflux from the stomach and a small diaphragmatic hernia. The rugae of the esophagus could not be satisfactorily examined, but on one or two of the films there were filling defects which simulated dilated veins. There was no evidence of malignancy in the esophagus, stomach or duodenum. The duodenal loop was not unusually large and there was very little evidence of enlargement of the liver, but the stomach seemed displaced toward the right by a mass in the region of the spleen. The splenic flexure, however, was moderately high in position. The hepatic flexure was in normal position. Several diverticula were seen in the region of the sigmoid. The mucosa of the colon appeared normal.

The patient was put on a high carbohydrate diet with fluids. Several abdominal taps were performed. The ascitic fluid had a specific gravity of 1.009 and contained 200 red blood cells, 1300 white blood cells and about 160 epithelial cells. Three days following admission he had a frank hemorrhage from the stomach. The ascites reaccumulated. It was believed that he

was being helped by intravenous glucose. On the ninth day he was transfused with 450 cubic centimeters of whole blood and four days later with 325 cubic centimeters. On the fourteenth day he vomited a little blood and passed a tarry stool. An abdominal paracentesis was done that day with the removal of two liters of deep yellow fluid. This was followed by an injection of four cubic centimeters of salyrgan intra-peritoneally. Three days later 4000 cubic centimeters of ascitic fluid was removed. A surgical consultant did not believe operation was advisable. On the twenty-first day a narrow elongated mass was felt just above the umbilicus. It was not determined whether this mass was in the abdomen or in the abdominal wall. He continued to receive intravenous glucose but he gradually failed, vomiting small amounts of blood from time to time. The cord-like mass in the epigastrium was more prominent during the last few days of life. He died twenty-four days after admission.

X-RAY INTERPRETATION

DR AUBREY O HAMPTON We had difficulty in examining this patient. The thing we tried to decide was whether or not he had carcinoma of the gastro-intestinal tract, cirrhosis of the liver or cancer of the liver.

We had some evidence that the spleen might be enlarged at the examination of the stomach. There is an area in here which seems to be larger than usual. The fundus of the stomach is small and certainly not displaced toward the left, perhaps displaced toward the right. When we filled the colon, however, the splenic flexure occupied that space, and yet there is no gas at this examination. So that we had about a fifty-fifty chance of saying whether the spleen was normal or abnormal.

We found diverticula in the colon spasm of the sigmoid and a generally dilated colon which contained gas and a moderate amount of feces.

That was all we found, no evidence of cancer in the colon or stomach.

Then we tried to examine the esophagus with special reference to the mucosa and varicose veins but here again we had this shadow which seemed to displace the fundus of the stomach to the right, a hernia of the stomach and an esophagus that did not empty at all. We gave him a drink and it stayed there, part of it in the fundus but at least the lower half of the esophagus would stay filled so we had no opportunity to examine the mucosa.

We found a diverticulum in the middle third of the esophagus that was not in the note but does not amount to anything—a traction diverticulum. Here is the diverticulum in relation to the arch of the aorta. The diaphragm is quite high, with fluid on both sides of the pleural

cavity, and the part of the esophagus we wanted to examine was obscured by fluid, by the diaphragm and by barium.

DR WYMAN RICHARDSON Was there any fluid in the chest?

DR HAMPTON Yes. This film shows a little distortion but it is present in one of the films we have here. Dr Schatzki came over to help me find varices of the esophagus but he gave it up too. There is a long shadow that looks a little like a varix. We finally decided we could not make a diagnosis of cirrhosis of the liver. All that we could say was that he had diverticulitis, diaphragmatic hernia, diverticulum of the esophagus, pleural effusion and high diaphragm.

DIFFERENTIAL DIAGNOSIS

DR RICHARDSON This is a very definite clinical story with progression to the inevitable ending, death. It should have a very definite answer to it but when we come to consider the possibilities it does not appear so clear as I should like to have it. The things we have to explain in the order of occurrence are weight loss, diarrhea, jaundice, edema, vomiting, hematemesis, leukocytosis and death.

The weight loss is definite according to the history, for a period of a year, and suggests definitely some systemic disturbance. There was no change in the man's habits. He was known to eat well. I think we must assume that he has had systemic disturbance for a year. I am thinking of neoplasm and cirrhosis of the liver.

Diarrhea which began five weeks before admission to the hospital, was coincident with a jaundice which apparently was obstructive in type, or largely obstructive. I explain the diarrhea on the basis of some disturbance in the digestion particularly undigested fat and particularly as associated with the jaundice. It should be noted that one brown stool was seen in the hospital here and gave a positive test for bile, but the description of that jaundice seems to me very definitely obstructive.

Edema appeared. It is a curious edema, starting in the left foot gradually involving both feet and resulting in ascites. Although there was no clinical evidence of fluid in the chest there is some x-ray evidence of it. That edema cannot be due to cardiac disease or renal disease. So far as I can see, it must therefore be explained either on the basis of cirrhosis or some severe damage to the liver, or on the basis of some obstruction of the venous return.

The vomiting I believe, was due to venous stasis with impaired gastric function. This was followed by the vomiting of blood, and again I think it was due to venous stasis. There may have been some gastritis, but I think no definitely ulcerative lesion will be demonstrated.

The leukocytosis should be explained, and I cannot explain it. Twenty-six thousand is a high count. I should like to have seen the smear with regard to whether there were any abnormal cells or whether the white cells were toxic, of the type seen in infection.

Finally he died. Did he die of hepatic failure? Did he die of hemorrhage? Or did he die of some gastro-intestinal disturbance such as an ileus, as the result again of venous stasis? I think he died of all three factors.

In differential diagnosis, then, the things that come up are first cirrhosis of the liver. This is an extraordinarily rapid progression for portal cirrhosis. The jaundice is intense and severe, rather sudden, and does not suggest the mild jaundice seen in portal cirrhosis. The liver is said to be big. We can possibly doubt that, as the difficulty of palpating the liver in an ascitic abdomen is very great. We shall have to assume something besides pure cirrhosis of the liver. I think some degenerative lesion in addition to a cirrhosis which was previously present might explain the symptoms. I mean he might have a subacute yellow atrophy on top of an already damaged liver that might conceivably give this picture. Edema as the first symptom of cirrhosis of the liver is a very serious sign, but the whole story here, with marked and sudden edema, does not suggest to me subacute yellow atrophy on top of cirrhosis of the liver, although this possibility should be borne in mind. There is no history of the ingestion of any toxic material. This was the only condition that I considered other than the one I have suggested for a definite diagnosis.

I believe that this man had a venous obstruction somewhere high in the abdomen, probably associated with some sort of venous thrombosis and surely involving the portal system. I think too that he has a definite malignant lesion of some sort, some part of which will be found to involve the biliary tract. Finally I think he has aortic arteriosclerosis, simply on the basis of the harsh systolic murmur heard at the base of the heart.

CLINICAL DISCUSSION

DR TRACY B. MALLORY: Dr. Jones, you had the advantage of seeing this patient.

DR CHESTER M. JONES: I went through the same mental difficulties that Dr. Richardson has and finally arrived at a diagnosis, but I do not think I did so well as he. From the story there are only two possibilities, either cirrhosis with subacute atrophy, which clinically fitted the picture very well, or malignancy. More or less arbitrarily we decided that cancer offered no opportunity for treatment, therefore the only optimistic point of view was the possibility of cirrhosis with acute yellow atrophy and to treat

the patient as if he had that. That we did. For a short time,—a week or ten days,—he improved very definitely under fairly energetic treatment for very severe liver damage.

The ascites, pleural effusion, edema, all could be explained on the basis of hepatic failure. It seemed to me, because it very frequently does occur either with cirrhosis alone or cirrhosis plus acute yellow atrophy.

There were one or two findings of extreme interest. One was the finding of a good deal of blood in the stools. One also can get a strongly positive guaiac in any severe liver injury whether due to intrahepatic disease or with disease due to a lesion of the bowel. It is a little more suggestive of malignancy than of intrahepatic disease. One other finding of some interest—and I have the advantage of Dr. Richardson in that—was the color of his stools. He did have several stools that contained plenty of bile. They became more bile stained during the first few days. There were several days when there was a good quantity of bile, a point somewhat against cancer, and it was possible that there again we were dealing with an intrahepatic jaundice rather than with one due to pure obstruction from outside.

The question as to whether there was or was not a spleen was an important one to decide, and we were not able to decide it. The evidence we had seemed more in favor of large spleen than not. There were several x-ray findings. In the presence of such a picture in most instances it is safe to say that splenomegaly is direct evidence against malignancy and strongly in favor of intrahepatic disease. I always try to make a very definite effort to convince myself whether or not there is a large spleen. In this case we were not able to make a positive finding, although the evidence was in favor of some splenic enlargement.

We felt right along, and told the family also that he had one of two things, either cancer or some sort of intrahepatic disease, probably on the basis of an old cirrhosis. I have forgotten whether the final picture was one of a terminal hemorrhage.

There was one finding we overlooked, and as Dr. Richardson read the history it was very easy to overlook. It did not strike us as an important finding, but it should have given us the clue to the diagnosis. That was the appearance of a mass in the abdominal wall about an inch across in the vicinity of the transverse colon. At first we wondered if there was any fecal material in the transverse colon. It developed very rapidly, in a week or ten days, and toward the end it became evident that it was just under the skin.

I have forgotten what diagnosis he was discharged with, but I certainly hesitated between the two diagnoses of cancer or atrophy on top of

cirrhosis, realizing that malignancy had to be considered very strongly

CLINICAL DIAGNOSIS

Acute yellow atrophy (on old cirrhosis of the liver)

ANATOMIC DIAGNOSES

Carcinoma of intrahepatic bile ducts with metastases to the gall bladder

Acute atrophy of the liver

Jaundice

Ascites

Chronic cholecystitis

Cholelithiasis

Chronic fibrous peritonitis

Perisplenitis

Arteriolar sclerosis, slight renal

PATHOLOGIC DISCUSSION

DR MALLORY The autopsy findings here showed a rather small liver which was not nodular and on the outside except for discoloration from bile stasis, seemed practically negative but when we cut into it we found that the major portion of the right lobe was replaced by a mass of obvious carcinoma. This was apparently primary in the right hepatic duct just inside the liver and had spread up the periportal spaces following the ramifications of the bile ducts throughout much of the right lobe of the liver. A few strands of tumor were found in lymphatics in the gall bladder wall, but the mucosa of the gall bladder was not involved. So that I feel quite sure it is a primary carcinoma of the intrahepatic bile ducts.

There was also very extensive necrosis of the liver tissue most marked in the immediate neighborhood but also extending throughout the entire liver. So for once we can agree with both parties. There was a considerable degree of atrophy and there was malignancy.

The mass which was felt in the abdominal wall was a peritoneal implant of the tumor on the peritoneal surface of the anterior abdominal wall tying it to the transverse colon. There were widespread peritoneal implants throughout the entire cavity and I should imagine that the ascites was directly due to them that is, a cancerous peritonitis rather than obstructive from the liver itself.

The venae cavae appeared slightly dilated but were free from thrombi, and we found no thrombi in the iliac vessels.

A STUDENT Was there any fluid in the chest?

DR MALLORY We were restricted to the abdomen. We did not examine the chest.

DR HAMPTON How big was the spleen?

DR MALLORY The spleen was extremely small weighing only 75 grams, and I cannot explain the distortion.

DR HAMPTON The small liver might cause the stomach to move to the right.

DR ARLIE V BOCK Was there a diaphragmatic hernia?

DR MALLORY That was not particularly obvious and we did not know that x-ray report at the time and missed it. I think it is very easy to miss a diaphragmatic hernia unless our attention is called to it.

DR HAMPTON We have had the same thing come up before, displacement of the stomach due to large liver. I do not understand why the spleen does not enlarge if the liver is small though.

DR MALLORY With cirrhosis the spleen almost invariably enlarges.

DR HAMPTON I think Dr Schatzki has seen one patient with varices in the esophagus due to carcinoma.

DR RICHARD SCHATZKI One case, not malignancy of the liver but malignancy of the stomach with glands surrounding the portal vein at its entrance to the liver giving portal obstruction.

DR MALLORY In this case we were unable to demonstrate any varices in the stomach, also we were unable to find any hemorrhoids. We did not find any definite focus to account for the bleeding either by mouth or by rectum.

DR JONES Was he jaundiced enough so that he could have had a diffuse mucous membrane bleeding?

DR MALLORY Yes.

DR JONES I should like to ask one question. I think it is a very important diagnostic point in handling these cases as to whether there is, or is not an enlarged spleen. I have made it a working rule that if the spleen is enlarged it is against malignancy. I should like to know what Dr McKittrick and Dr Bock think of that as a working rule.

DR LELAND S MCKITTRICK A palpable spleen due to cancer is exceedingly rare. Dr Jones's point is very well taken.

DR BOCK That is a somewhat difficult question. If the liver is enlarged and the spleen is not palpable the chances are great that one is dealing with a cancer of the liver as opposed to a cirrhotic process.

DR RICHARDSON How about the leukocytosis?

DR JONES I think that was very remarkable. I could not explain it at the time. I have forgotten whether subsequent counts were high or not. I think at times one does get a leukocytosis in acute yellow atrophy but I am not absolutely certain of that. I do not think it follows the general rule that in severe liver disease one gets a leukopenia.

DR MALLORY Certainly in some cases you find an enormous infiltration of the liver with polymorphonuclears which would almost necessitate leukocytosis.

A PHYSICIAN How often do you get an en-

larged spleen at autopsy that is not felt some-time before death?

DR MALLORY Fairly often

CASE 20232

PRESENTATION OF CASE

First admission A thirty-seven year old American postoffice clerk entered for the first time fifteen years before his fifth and last admission

He had been seen in the Outpatient Department for six years for ulceration of several of his toes. Although his Wassermann was negative at the beginning of his Outpatient treatment he was given salvarsan, and four years later was given potassium iodide and mercury at another hospital. His right fifth toe was amputated. During his first stay in the Massachusetts General Hospital his Wassermann was strongly positive. He was discharged at the end of nine days with a diagnosis of syphilitic endarteritis.

Second admission, twelve years later

During his stay the second and third right toes were amputated for bone necrosis. A Hinton test was negative. He was discharged at the end of a month.

History of interval Ten and a half months after his discharge he had a gastric upset with considerable gas, nausea and slight vomiting. There was no blood in the vomitus, and no pain. About ten days before his third admission the calloused area became ulcerated and a few days later the whole foot became swollen, red and hot.

Third admission, a year after his previous discharge

X-ray examination showed spina bifida of the sacral segments. Operation upon the leg was not felt to be indicated. He was discharged in two weeks somewhat improved.

Fourth admission, a year and a half later. The complaint at this time was return of the old pain in his right foot and leg.

He gave a history of having had a chronic mild cough for five or six years. The cough would occur about every ten minutes with the production of a white watery sputum amounting to about a cupful a day. The sputum was not foul smelling. There were no hemoptyses or night sweats.

Examination showed a pale, pasty faced man lying apathetic in bed. The left pupil was larger than the right and both were somewhat irregular. Both lungs were filled with coarse moist and sibilant râles. There were trophic ulcers of both feet. There was no evidence by x-ray of bone destruction or new bone formation.

The lesions on his feet were treated with

poultices and boric packs. He was discharged in five days improved.

History of interval Six months later, four months before his fifth admission, he began to have a poor appetite. He did not have any gas, nausea or vomiting between meals. Three weeks before admission he began to have epigastric discomfort between meals. The day before admission while riding to work he suddenly felt a sharp pain in both shoulders and had severe nausea. He went directly to the dispensary in the postoffice where he worked, and there collapsed. After vomiting his breakfast he continued to bring up brownish material which his physician called blood. He remained at home that day and continued to have severe pain in his shoulders. He noticed that his abdomen was beginning to be distended. His last bowel movement occurred the morning before admission. He was brought to the Emergency Ward by ambulance.

Fifth admission, ten months after his fourth discharge.

Physical examination showed a pale, emaciated middle aged man. The skin was moist. The mucous membranes were pale. There was slight stiffness of the neck on flexion and lateral movements. The chest showed a costal type of breathing. There were no diaphragmatic movements. The heart sounds were of fair quality. The blood pressure was 128/108. The abdomen was scaphoid and showed marked muscle spasm. It was tympanic throughout and showed some shifting dullness and some obliterated liver dullness. There was no tenderness.

The temperature was 101.2°. The Hinton test was positive, the Wassermann negative.

An x-ray film taken with the patient prone showed a normal kidney outline on the right. The left kidney was obscured by an artefact. When the patient assumed the upright position a large amount of gas was visualized beneath the diaphragm on both sides.

He was operated upon immediately. He failed very rapidly and died approximately an hour and a half after the operation.

DIFFERENTIAL DIAGNOSIS

DR BETH VINCENT It will occur to all of us after listening to this history that a perfectly logical diagnosis can be made which seems to be fairly consistent with the data given in this case. In fact it fits so well that my experience in these exercises makes me doubt the accuracy of the diagnosis. But I think we must analyze these cases and evaluate the facts as they are given.

This man was in the thirties and had been under observation in this hospital and others at various times since he was fifteen years old. He finally came in after an acute attack of apparently two days' duration. We will begin by

analyzing that attack and then see if the past history that we have available will throw any light on the condition for which he underwent an operation

He was pretty well, because he was going to work, and then he was suddenly taken with a sharp pain in both shoulders and severe nausea. We are not told whether he had pain in the abdomen. He collapsed, was taken to a dispensary, stayed there for a while and went home. He continued to vomit and was brought to the hospital in an ambulance, I take it the next morning, apparently a very sick man at that time.

When he reached the hospital they found that he was very much emaciated. I will select the things that seem of value in this attempt at diagnosis. There is slight stiffness of the neck, a costal type of breathing and a scaphoid abdomen with marked muscular spasm. For the first time we begin to suspect that this was an acute abdominal condition with which we were dealing. Inconsistent with this, however, is the fact that he had no tenderness. Going farther we find that there was shifting dullness indicating fluid, an observation by the way which in my experience is very apt to be wrong both ways. Sometimes there is free fluid in the abdomen and we are unable to detect it on physical examination, and quite frequently we demonstrate free fluid that proves not to be there when we open the abdomen. Therefore we will take this for what it is worth. He has free fluid the abdomen is tympanitic with some shifting dullness and some obliterated liver dullness. The x-ray shows that there was a large amount of gas visualized beneath the diaphragm on both sides. Here is a very definite physical fact that we have to count on and to account for. He also had a temperature.

I think he underwent an emergency operation. The question is what were the findings? I should suspect that they would find a peritonitis. I should suspect that the peritonitis was due to perforation somewhere along the alimentary tract. The next thing is to go over the case again and see if that diagnosis is correct and go farther and determine the character of the lesion which caused the perforation.

The fact that he had pain in the shoulders, if this is an abdominal case, would indicate that the lesion was above the umbilicus rather than below, because we know that abdominal pain high up is frequently referred to the shoulders. In the absence of any definite statement we will assume that it was an upper abdominal lesion.

What are the forms of perforation that we most commonly deal with surgically? If it is in the lower abdomen we sometimes have rupture of an enlarged cecum. The cecum is enlarged usually because we have obstruction on the left side, due often to a scirrhus cancer of the sigmoid. We have nothing, however, to indi-

cate that the man was obstructed or had scirrhus cancer. He would not necessarily have blood in the movements. He had not the lower abdominal tenderness that we find in these cases that eventually have a ruptured cecum from distention and necrosis.

In the upper abdomen of course the things that most often cause perforation are rupture of a peptic ulcer, gastric or duodenal or rupture of a malignant ulcer of the stomach. He had a poor appetite for several months before his entry this time. He began to have some pain between meals, which looks more like a peptic ulcer. He was emaciated when he came in, which of course would be consistent with cancer. He had the collapse with sudden onset that we see more often in rupture of an anterior wall duodenal ulcer than from any other cause. I should think so far as frequency goes it is more apt to be duodenal ulcer than anything else although it might be cancer of the stomach.

Going into the past history to see if there is any information there to help us we find that as a young person he came under observation for ulceration of his toes and was later found by x-ray to have spina bifida so he probably had trophic ulcers. The Wassermann was negative at his first visit, but later it was positive. In all probability he had acquired syphilis in the meantime. I think we may assume that he had syphilis. I am at a loss to describe any syphilitic lesion of the abdomen that would give this picture of perforation. Gastric syphilis could I suppose give rise to an ulceration and perforation but syphilis of the stomach usually results in fibrosis and deformity. People with syphilis of the stomach get very thin but have a good appetite. This man had no appetite. I am unable to suggest any syphilitic lesion with the account of this abdominal emergency.

I prefer to come to the conclusion that he did have a perforation of the alimentary tract, and as we have nothing to indicate that it took place in the esophagus that it probably was a lesion in the upper abdomen. It could be due either to malignancy of the stomach or to gastric or duodenal ulcer. Duodenal ulcer being more common, I think I will say that he had peritonitis with perforation from duodenal ulcer.

CLINICAL DISCUSSION

DR JAMES C. WHITE. We had this patient on the Circulatory Service several times. He had two types of known spinal disease to account for trophic ulcers of the type that he had had, central nervous system lues and spina bifida, both very common causes of the type of ulcer that he showed. If he had been a diabetic he might also have had very similar looking ulcers. These are the three most common causes of trophic ulcers that we have seen on the

Peripheral Vascular Service It was very hard for us to decide which type of etiology was the cause of this ulceration at the time we saw him, although Dr Vincent has pointed out that he probably had ulcers before he acquired syphilis, so that the primary cause must have been his spina bifida

In treating him we amputated several toes. As in all these cases with trophic ulcer of spinal cord origin, there was no difficulty in healing. As both his legs were involved, it was very difficult to give him a good working leg. I cannot remember the anesthetic level, but the reason we could not do any adequate weight bearing amputation was because his anesthesia extended so high. We therefore had to carry him along in a palliative way and keep his feet in the best possible condition.

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Shock, peritonitis, ileus

ANATOMIC DIAGNOSES

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General peritonitis
Pulmonary emphysema
Arteriosclerosis, slight

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The New England

Journal of Medicine

SUCCESSOR TO

THE BOSTON MEDICAL AND SURGICAL JOURNAL

Established in 1828

Published by THE MASSACHUSETTS MEDICAL SOCIETY
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While these criticisms have a technical justification according to the statute, it should be recognized that an extensive and important service is rendered to the indigent people of Boston by the staff without any financial recompense and further that the city profits to a great extent by the education of physicians who outside of the hospital walls serve the people of this municipality more efficiently by reason of the opportunities for study and training therein

It is probably impossible to estimate adequately the value of this institution to the city directly and through its contributions to medical education

Boston stands as a great center for advanced research and teaching of medicine and the city reaps a large harvest directly through the great number of people who come here because of this distinction. The reputation of the medical men here tends in no small way to keep Boston in the front rank of progressive cities. They are worthy of recognition in the way of all reasonable opportunities for caring for their patients. Abuses are suspected, and in some instances proved in hospital administrations at times in many places, and should be corrected but fairness to the administration and the medical staff may require a just evaluation of the benefits conferred upon the city as a whole by institutions like the Boston City Hospital. Even with attention to the criticisms of the Commission, may it not be wise to strive for an amendment to the statute enacted to create the City Hospital in order that there shall be no weakening of its beneficent functions toward its patients and no interference with scientific progress?

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cal or mental, lack the equipment to meet life in open competition with their fellows. Their needs and the methods of filling them are outlined here by experts in their various fields. Thus, Eleanor E. Kelley, Supervisor of Social Service of the Department of Public Health explains what the social worker can do for the handicapped in the way of determining the type, extent and duration of the handicap and the necessary adjustments to it. Agnes Early, formerly Community Nutritionist of Lawrence, outlines the nutrition program which worked out so successfully in that city. Dr. T. Duckett Jones of the House of the Good Samaritan, explains the care of cardiac children. Caroline N. Shaw, Director of Occupational Therapy of the Robert B. Brigham Hospital, contributes a paper on occupational therapy. Dr. Leon A. Allen, Superintendent of the Lakeville Sanatorium, writes on vocational guidance for the tuberculous child. Bernice W. Billings and Esther L. Trutkoff explain the object and methods of the Sheltered Workshop of the Boston Tuberculosis Association in providing training and suitable employment for patients who have been treated for tuberculosis in sanatoria or at home and have become well enough to work but are not yet strong enough to return to full-time jobs.

Somewhat the same type of help is being given by the Cooperative Workrooms, Inc., as described by Hazel Newton. Dr. Neil A. Davton, Director of the Division of Mental Deficiency of the Department of Mental Diseases, describes the traveling school clinics for the examination of retarded children in the public schools. Dr. L. Vernon Briggs writes on the prevention of crime. Anna King, Director of Social Service of the Austen Riggs Foundation, contributes an article on the maladjusted school child and his needs. Further papers are on the rest and nutrition program in the Boston Public Schools, by Dr. Clara Lortman, physical education for the handicapped, by Carl L. Schrader, of the Department of Education, vocational rehabilitation for disabled persons, by Robert O. Small, of the same Department, atypical children and their education, by Arthur B. Lord, Supervisor of Special Schools and Classes of the Department of Education, the program and its results of the Massachusetts Hospital School, by Ruth Park, and the annual census of physically handicapped children, by Margaret MacDonald, of the Department of Public Welfare. The introductory article on community care of the handicapped is contributed by Mr. Herbert C. Parsons, Executive Secretary of the Massachusetts Child Labor Committee.

The Commonwealth always furnishes valuable and stimulating reading, the number under discussion is particularly instructive, and the editor, Dr. M. Louise Diez, Director of the Division of Child Hygiene, deserves both congratulations and the heartiest support in this undertaking.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors

DAVIS, LINCOLN B.A., M.D. Harvard University Medical School 1898 F.A.C.S. Formerly, Chief of East Surgical Service, Massachusetts General Hospital. Now, President, Boston Medical Library. Consulting Surgeon, Massachusetts General Hospital. His subject is "The Objectives of Medical Progress." Page 1197. Address 279 Beacon Street, Boston, Massachusetts.

MYERSON, ABRAHAM M.D. Tufts College Medical School 1908. Professor of Neurology, Tufts College Medical School. Director of Research, Boston State Hospital. Visiting Neurologist, Boston City, Beth Israel and Bickur Cholim Hospitals. Address 270 Commonwealth Avenue, Boston, Massachusetts. Associated with him is

BERLIN, DAVID D. M.D. Tufts College Medical School 1923 F.A.C.S. Assistant Professor of Anatomy, Tufts College Medical School. Surgeon to Thyroid Clinic, Beth Israel Hospital. Assistant to Visiting Surgeon, Boston City Hospital. Address 68 Bay State Road, Boston, Massachusetts. Their subject is "A Case of Postencephalitic Parkinson's Disease Treated by Total Thyroidectomy." Page 1205.

LOONEY, J. M. A.B., M.D. Harvard University Medical School 1920. Director of Laboratories, Memorial Foundation for Neuro-Endocrine Research, Worcester State Hospital. Address Worcester State Hospital, Worcester, Massachusetts. Associated with him is

HOSKINS, R. G. A.B., A.M., Ph.D., M.D. Johns Hopkins University School of Medicine 1920. Director of Research, Memorial Foundation for Neuro-Endocrine Research, Boston Research Associate, Harvard Medical School. Associate, Evans Memorial. Address Worcester State Hospital, Worcester, Massachusetts. Their subject is "The Effect of Dimetrophenol on the Metabolism as Seen in Schizophrenic Patients." Page 1206.

KUHNS, JOHN G. A.B., M.D. Johns Hopkins University School of Medicine 1924. Assistant in Orthopedic Surgery, Harvard Medical School. Assistant Orthopedic Surgeon, Children's and Robert B. Brigham Hospitals. Consulting Orthopedic Surgeon, Sturdy Memorial Hospital, Attleboro. His subject is "Hypertrophic Arthritis of the Hip. A Review of Seventy-Nine Patients." Page 1213. Address 372 Marlborough Street, Boston, Massachusetts.

NEWELL, JOHN L. A.B., M.D. Harvard University Medical School 1930. Resident, Boston Lying-In Hospital. His subject is "A Case of

Multiple Congenital Anomalies of the Müllerian and Genito-Urinary Systems with Absence of the Coccyx." Page 1217 Address 221 Longwood Avenue, Boston, Massachusetts

COTTON, FREDERIC JAY, M.D., AND MORRISON, GORDON MACKAY, M.D. See page 817, issue of April 12, for records of authors Their subject is "Repair of Orbicular Ligament at the Elbow" Page 1218

HAYDEN, E PARKER. A.B., M.D. Columbia University College of Physicians and Surgeons 1919 F.A.C.S. Assistant in Surgery, Harvard Medical School Surgeon to Out-Patients and Chief of Rectal Clinic, Massachusetts General Hospital Member of Staff of Palmer Memorial Hospital His subject is "Progress in Proctology" Page 1219 Address 270 Commonwealth Avenue, Boston, Massachusetts

MISCELLANY

THE NORFOLK DISTRICT MEDICAL SOCIETY

OFFICIAL COPY OF ACCEPTED RESOLUTIONS OF THE RESOLUTIONS COMMITTEE

Whereas free and nearly free treatment privileges in municipal and endowed charitable hospitals are designed primarily for the indigent and when properly managed meet with the approval, coöperation and support of the medical profession and

Whereas the growing extension in such institutions of this care and treatment to the non indigent results in a lessened efficiency and a comparative neglect of the deserving people for whom these privileges are established and

Whereas this recognized abuse of such medical charity often results in unwitting and unfair competition with the private physician by these supposedly charitable institutions therefore

Be it resolved that

1 The Norfolk District Medical Society through its Councilors urge upon the Massachusetts Medical Society the need for immediate corrective action to speedily bring relief from the aforesaid existent conditions through appropriate legislation and all other necessary measures

2 The Norfolk District Medical Society through its proper officers and committees bring the matter at once to the attention of His Honor the Mayor of the City of Boston and to the proper authorities of the various charitable hospitals in greater Boston urging that these cited abuses and impositions be discontinued and that every effort be made to correct and eradicate them

3 There be established in Boston by the municipality or by the coöperation of private agencies representative of the charitable hospitals or both a duly accredited agency or clearing house which shall investigate the financial status of all applicants for medical charity, in any and all branches and which shall be empowered to issue suitable and certified

credentials to those found worthy of gratuitous treatment.

4 Pending the establishment of this proposed agency or clearing house, each institution in question be urged to make every effort to expedite the correction of these existing abuses by the signed statement of each applicant in affirmation of the necessity for gratuitous treatment further, to display in such a manner as to be easily read by all applicants for charitable aid, in any and all branches, a suitable sign indicating clearly that the institution, or at least that particular department, is for charity patients only and is not open to those financially able to pay a fee to a physician, and finally, should it be learned at any time that this entrance requirement has been ignored by any applicant, a penalty of the immediate termination of treatment shall be exacted

5 Copies of this resolution be placed in the hands of neighboring district societies with the request that such societies join with the Norfolk District Medical Society in this movement to correct and eradicate the aforesaid abuses of medical charity

Signed

FREDERICK L. HAYES, *Chairman*,
MAURICE GERSTEIN,
DAVID HALBERSLEBEN

April 18 1934

A LIBRARY OF LEGAL MEDICINE

The dedication of the George Burgess Magrath Library of Legal Medicine occurred in the Faculty Club of the Harvard Medical School May 23 1934

This library is named for Dr Magrath, medical examiner of Suffolk County, who is the first occupant of the chair of legal medicine at Harvard established in 1932 by Mrs Francis Gleffner Lee of Littleton N. H. who is also the donor of the new library

The library will have one thousand volumes of rare editions, and it is the intention of the donor that it will be the best collection of literature relating to the specialty extant.

Mrs Lee and Dr Conant, President of Harvard University addressed the meeting

OSTEOPATHS DENIED THE RIGHT TO PRACTICE SURGERY

A bill designed to confer on osteopaths the right to practice surgery within certain limitations in New York State was vetoed by Governor Lehman in the following language

This bill eliminates the present requirement of the Education Law that an osteopath shall not perform surgery with the use of instruments and adds a number of provisions which seem to authorize osteopaths to engage in every form of medical practice except the giving of drugs by mouth to cure disease and the performance of certain specified surgical operations' the Governor said in his veto of the bill

"This bill is objectionable, too, because it contains vague and unintelligible language. The Department of Education states that, because of ambiguous language, it would be impossible to restrict and prevent any type of medical practice other than some types of major surgery.

"Although the proponents of the bill have argued that the intent is that surgical practice be limited to the first aid and minor surgery, no such limitations are explicitly written into the bill."

CANCER HOSPITAL FIFTY YEARS OLD

The Memorial Hospital for the Treatment of Cancer and Allied Diseases, Central Park West and 106th Street, will observe its fiftieth anniversary to night and to-morrow. A scientific meeting will be held to-night at the Academy of Medicine, 2 East 103d Street, with Dr. John A. Hartwell, Dr. Clarence Cook Little, Dr. James B. Murphy, Dr. Robert B. Greenough and Dr. E. C. Dodds, of London, as speakers. Eleven symposia on various types of cancer will be held at the hospital to-morrow with a dinner at the Waldorf Astoria in the evening—*New York Times*, May 24, 1934.

GROUP HOSPITAL INSURANCE

Governor Lehman on May 16, 1934, signed the bill which authorizes the establishment of non-profit group payments for hospital service. In connection with this New York plan, Homer Wickenden explained that the purpose is to provide hospitalization for workers on small salaries through systematic monthly payments with the added provision that workmen desirous of availing themselves of this plan authorize employers to deduct, from their pay, sums amounting to about ten dollars per year for the provision of three weeks' free hospital care of a semi-private nature, by physicians chosen by the patient. This, however, does not include the physician's charges.

Sentiment in favor of such plans seems to be growing, for about six thousand persons in Orange County, New Jersey, are receiving hospitalization under a similar plan.

RÉSUMÉ OF COMMUNICABLE DISEASES IN MASSACHUSETTS FOR APRIL, 1934

Present indications are that the epidemic of measles reached its peak in March and is now on the decline.

Morbidity from whooping cough had its highest reported figure since 1915.

Diphtheria, pulmonary tuberculosis and tuberculosis other forms reached their lowest reported April incidence.

Typhoid fever is running considerably lower than in 1933.

The incidence of dog bites remains high.

Anterior poliomyelitis, lobar pneumonia epidemic

cerebrospinal meningitis, German measles, mumps, and chicken pox show nothing remarkable.

RARE DISEASES

Anterior poliomyelitis was reported from Lowell, 1. *Dysentery (amebic)* was reported from Cambridge, 1, Worcester, 1, total, 2.

Encephalitis lethargica was reported from Boston, 1, Clinton, 1, Fall River, 1, Lawrence, 1, Marblehead, 1, Marlboro, 1, Springfield, 1, total, 7.

Cerebrospinal meningitis was reported from Boston, 1, Cheshire, 1, Conway, 1, Easthampton, 1, Holyoke, 1, Norwell, 1, Springfield, 2, Worcester, 1, total, 9.

Pellagra was reported from Nahant, 1.

Septic sore throat was reported from Belmont, 1, Boston, 11, Cambridge, 1, Chelsea, 1, Easthampton, 1, Lowell, 1, Revere, 1, Stoneham, 1, total, 18.

Tetanus was reported from Lawrence, 1, Salem, 1, total, 2.

Trachoma was reported from Cambridge, 1, Lawrence, 1, total, 2.

Trichinosis was reported from Longmeadow, 1.

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

MONTHLY REPORT FOR APRIL, 1934

Disease	April 1934	April 1933	Average*
Anterior Poliomyelitis	1	—	3
Chicken Pox	1000	1209	967
Diphtheria	59	77	206
Dog Bite	654	586	503
Epidemic Cerebrospinal Meningitis	9	6	14
German Measles	70	92	416
Gonorrhea	431	388	440
Lobar Pneumonia	531	339	497
Measles	9138	1974	2991
Mumps	549	786	839
Scarlet Fever	1001	1644	1573
Syphilis	389	339	307
Tuberculosis Pulmonary	266	307	392
Tuberculosis Other Forms	32	39	53
Typhoid Fever	8	12	13
Undulant Fever	—	2	—
Whooping Cough	1634	840	879

*Average number of cases for April during the preceding five years.

THE SCHOOL OF NURSING AT SIMMONS COLLEGE

Miss Helen Wood of Newton Highlands has been appointed as Director of the School of Nursing at Simmons College, according to an announcement made by President Bancroft Beatley. The appointment coincides with a reorganization of the school from a school of Public Health Nursing to one in which emphasis is placed on the undergraduate

preparation of nurses, to meet the changing demands in the professional nursing field

The present School of Public Health Nursing was organized in 1918, when there was a crying need for nurses prepared in this field. Through cooperation with the Massachusetts General Hospital, the Peter Bent Brigham Hospital and the Children's Hospital, students who completed the five year program received the degree of Bachelor of Science from the college, and a diploma from the school of nursing of the hospital where they received their technical training.

It is thought now, however, that many young women who wish to combine preparation for nursing with a liberal college education, according to the Simmons plan, may desire to enter other fields than that of Public Health Nursing. In order to give the best possible undergraduate preparation to young women who may wish to do administrative work in hospitals or become teachers of nursing, as well as to meet the demands of hospitals for young women adequately prepared in these fields, the new plan has been devised. Under it, students will continue to receive technical training from the hospitals, but this will be supplemented by increased liberal college preparation, both fields of study to be supervised by the college. Upon completion of the program which as formerly, will require five years of study Simmons will grant both the Bachelor of Science degree and the Diploma in Nursing. The hospitals with which the college is affiliated have shown interest in making whatever changes will give stronger professional preparation in nursing.

Work in Public Health Nursing will be continued but this field will be considered as a graduate field open to nurses who have already received their diplomas from other nursing schools, and to a selected number of senior students in accredited schools of nursing qualified to make a satisfactory affiliation with Simmons. The direction of all instruction in Public Health Nursing will be carried on by Miss Marjory Stimson, who has served as Acting Director of the School for the past two years.

The School of Nursing itself in its entire program especially the undergraduate work will be under the direction of Miss Wood who has been a special lecturer in Nursing Education at Simmons during the past year. A graduate of Mt Holyoke College and of the Massachusetts General Hospital School of Nursing, she received the degree of Master of Arts at Columbia University after completing special work in the field of Education. Most of her professional activities have been in the line of Nursing Education. She was Director of the School of Nursing at Washington University St. Louis from 1919-1923, and of the School of Nursing at the University of Rochester from 1924-1931. From 1926-1928 she was President of the New York State League of Nursing Education, and from 1931-1932

served as Acting Superintendent of Nurses at the Massachusetts General Hospital. She is a member of the National League for Nursing Education, and a representative of the American Nurses' Association on the National Committee on Grading Schools of Nursing.

LARGER AND BETTER MEDICAL MEETINGS

Certain trends in Medical Science have brought about modifications in the manner by which knowledge of medical matters is presented for discussion among doctors. In many respects these are all for the best. In certain respects, however, this is not true. Many of us remember a time when everyone knew nearly everyone else in medical Boston what he was doing and the value of his contributions.

Boston is bigger now and in our clinics many young men and women are working on research problems. It is not to be expected that there should be such a general diffusion of knowledge of what is going on and who is projecting it as was the case twenty five years ago. Another factor which enters the equation is the insistence of the College of Surgeons that every hospital desirous of maintaining a standardized ranking, shall hold hospital staff meetings. As a result of this the general and sectional meetings that used to attract doctors to a consideration of various topics of universal and special interest have less and less appeal and the complaint that there are too many medical meetings is very general, and is more often than any other offered as an excuse for nonattendance. When out-of-town speakers are persuaded to come to Boston to present papers they oftentimes attract a much smaller audience than their merit deserves, or than the medical prestige of the city should accord a visiting celebrity. There may come a time when the visitor's attitude will change and he may not feel it worth while to give of his best. So altogether the effect of too many small groups holding their own meetings tends to a disorganization of the local profession and a depreciation of its standards, which may foster a cliquishness that is disastrous to the morale of the profession.

Before any of these untoward results develop may it not be possible for all societies representing the medical interests of Greater Boston to come together in a unified endeavor to present a really worthwhile and representative series of meetings, covering the entire field of medicine planned for a year in advance and conducted under the auspices of the Boston Medical Library where many of the larger meetings are now held?

Such a plan need not interfere in any way with the routine meetings of these societies. It would only call for each one of them to put forth a special effort to present one particularly attractive program that would bring out an audience which would be truly representative of Boston's profession. It would

not be difficult to arrange such a program if enthusiastic coöperation could be secured and great benefit might result in many ways

Such a plan has been under discussion and is about to be undertaken. It is hoped that those who see this article will take the opportunity to give the matter some consideration, so that when they are approached, later on, to secure their coöperation they will feel inclined to lend their aid

A Committee Representing the Suffolk District Medical Society and the Boston Medical Library to Consider Coördination of Medical Society Meetings

GEORGE P. REYNOLDS, M.D.
CHARLES F. PAINTER, M.D.

MORTALITY RATES

Telegraphic returns from 86 cities, with a total population of thirty-seven millions for the week ending May 12, indicate a mortality rate of 11.9 as against a rate of 10.8 for the corresponding week of last year. The highest rate (18.6) appears for Wilmington, Del., and the lowest (5.1) for Waterbury, Conn. The highest infant mortality rate (19.3) appears for San Antonio, Texas, and the lowest for Albany, N. Y., Duluth, Minn., Erie, Pa., Evansville, Ind., Oklahoma City, Okla., Providence, R. I., and Spokane, Wash., which reported no infant mortality.

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Deaths due to accidents in city	124	116	2,425	2,119
Death rate	17.3	16.2	17.8	15.5

—Bureau of the Census

PAYMENT OF DOCTORS WHO TREAT INDIGENT PATIENTS

Dr. S. S. Goldwater, Hospital Commissioner of New York City, advocated the payment of doctors who treat indigent patients in hospitals in an address before the Hospital Association of New York State, May 24, 1934.

He recommended this plan because of the serious economic conditions affecting doctors who are serving hospitals in which much time is devoted to caring for the poor.

HISTORICAL SKETCHES ON PUBLIC HEALTH PREPARED FOR THE MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH AND SPONSORED BY THE MASSACHUSETTS MEDICAL SOCIETY

EDWARD JENNER

BY ELEANOR J. MACDONALD, A.B.*

Old wives' tales and medical folk lore rarely pass the test of science. One by one they are discarded as knowledge advances. Occasionally, however, the ideas of simple country people regarding disease are forerunners of medical science. This was the case in regard to the tales told by dairy folk of Gloucestershire, England. They had observed that the milkmaids, who contracted a disease called cowpox from the cows, did not develop smallpox and the belief arose that individuals who had contracted the disease cowpox could never have smallpox. When we remember that most of those who had smallpox were left with a deeply pitted skin, we can well understand whence came the inspiration for the poets of those days to write about the beauty of the milkmaid, for she alone escaped smallpox and retained what we call to-day her schoolgirl complexion.

Two years before the Declaration of Independence was signed in Philadelphia a farmer in Yarmminster, England, Benjamin Jesty, voluntarily inoculated his wife and children with matter which he obtained from the cows with this disease. Later his children were inoculated with smallpox virus and did not contract the disease. This is the first recorded experiment of our present-day vaccination, but was disregarded until thirty years later.

It was Edward Jenner who furnished conclusive proof, which is accepted until this day that vaccination with cowpox protects against the disease smallpox. In 1762 when a lad of thirteen Jenner heard a young country woman say, speaking of smallpox, "I cannot take that disease for I have had the cowpox." This led Jenner to wonder if voluntary inoculation with cowpox would not be a preventive of the more serious disease. He was an apprentice to the famous surgeon, John Hunter, and had even helped in his experiments. He talked the matter over with Hunter and was advised, "Don't think, try, be patient, be accurate."

On May 14, 1796, he performed his first vaccination on a country boy, James Phipps, using the matter which he obtained from the arm of a milkmaid, Sarah Nelmes. This girl had contracted the disease from a cow. On July 1 Jenner inoculated Phipps with smallpox virus and the disease did not take. Within the next two years he had tried this experiment on twenty-three cases. He prepared a paper describing his work. The idea was taken up both in Europe and America and by the year 1800 about six thousand people had been vaccinated.

In Cambridge, Massachusetts, Dr. Benjamin Water

*Statistician, Division of Adult Hygiene, Massachusetts Department of Public Health.

house held the chair of the Hersey Professor of Theory and Practice at the Harvard Medical School. He is reported to have been the best educated physician in Massachusetts at that time, having studied in London, Edinburgh and Leyden. Dr Woodward says of him, "Dressing always in formal broad cloth and carrying a gold headed cane, somewhat condescending to his fellow practitioners whose knowledge he held in little esteem, contentious to a fault, with manners by no means agreeable, he was always in hot water and was eventually deprived of his professorship at the demand of all the other teachers in the school. A Jeffersonian Democrat when all his associates were Federalists, a member of the unpopular Society of Friends, a person almost universally disliked, this man of action overcoming all handicaps was nevertheless able—by hard work, persistence and the brilliancy of his intellect to place vaccination on a firm basis in this country for which work he was honored by scientific societies both here and abroad and by the London Medical Society voted the title of the American Jenner."

Dr Waterhouse, after hearing of Jenner's experiment obtained the material and on July 8, 1800, vaccinated his own son Daniel, aged five. He later vaccinated his three-year old son, a servant boy of twelve, and an infant of one. Other people asked for vaccination and he refused until he had proved that cowpox did protect against smallpox. To do this he wrote to Dr Aspinwall, a specialist of inoculation in New York.

"I have collected everything that has been printed respecting this distemper cowpox and have been so thoroughly convinced of its importance to humanity that I have procured some of the vaccine matter and therewith inoculated seven members of my family. My desire is to confirm the doctrine by having some of them inoculated by you. I can obtain varolious matter and inoculate them privately, but I wish to do it in the most open public way possible. As I have imported a new distemper I conceive the public have a right to know exactly every step I take in it. I write therefore to inquire whether you will on philanthropic principles try the experiment of inoculating some of my children who have undergone the cowpox. If you accede to my proposal I shall consider it an experiment in which we have coöperated for the good of our fellow citizens."

Waterhouse was so unduly disliked by other physicians that they were prejudiced against anything he advocated and it was nearly two years before he was able to persuade the Board of Health of Boston of the value of vaccination. That he did persuade them is evidenced by the announcement made by this Board.

The Board of Health for the town of Boston, are happy to have it in their power, this day to announce to their fellow-citizens the results of one of the most complete experiments which perhaps has ever been made, to prove the efficacy of the Cow

Pox, as a preventive against the Small Pox, and while they take the liberty to congratulate the public on this important discovery, they do earnestly recommend its introduction generally, and are confident that it will be the means of preserving the lives and adding to the happiness of millions."

In 1809 the State Legislature ordered every town, district and plantation where no Board of Health existed to choose three or more persons to supervise the inoculation of persons with cowpox. Between 1811 and 1837 there were but thirty nine deaths from smallpox in Boston, a far different story than in the two years 1697 and 1698 when one thousand individuals of a much less populous Boston had died.

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CORRESPONDENCE

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"Compensated, Cora mine, how are Theo, Min, ol right?"

"Yes there fine. Say, did you hear that Sy stole His' bundle?"

"No suffering cat units, digitol doc?"

"Well, I did, and he said, 'Nothing to it,' that Sy was the victim of a fib relation."

"Where's Traube?"

"Oh, hes second."

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"No, hes always slow."

"Did I tell you about Ede Ma Mr Harty? Her legs, water sight! Squills and Southey tubes fixed her, and now she could do an Annette Kellerman!"

Swish—lub—dub—Here comes doc."

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NOTICE

1934 GRADUATE FORTNIGHT OF THE NEW YORK ACADEMY OF MEDICINE

The Seventh Annual Graduate Fortnight of The New York Academy of Medicine will be devoted to a consideration of Gastrointestinal Diseases. The Fortnight will be held October 22 to November 2.

Sixteen important hospitals of the city will present coordinated afternoon clinics and clinical demonstrations. At the evening meetings prominent clinicians from various parts of the country who are recognized authorities in their special lines of work will discuss the various aspects of the general subject.

A comprehensive exhibit of anatomical, bacteriological and pathological specimens and research material will be shown. Many of the exhibits will be demonstrated.

Among the subjects to be presented at the evening meetings and in the hospital programs will be General principles involved in the diagnosis of gastro-intestinal diseases—Medical, Surgical, Roentgenological.

Constipation

Diarrhea

Physiology of the gastrointestinal tract

Diseases of the pancreas, especially acute pancreatitis and its treatment

Diseases of the esophagus

Functional diseases of the stomach

Disorders of the gastrointestinal tract in children—Infections, Management, Surgery in infants and children

Diet in relation to gastrointestinal diseases in infancy

Clinical examination of the patient from the surgeon's and the internist's points of view

Demonstrations of diets used in treatment

Peptic ulcer—Medical discussion, Surgical discussion

Carcinoma of the stomach

Chronic lesions in the paracecal region

Acute appendicitis

Peritonitis

Gall bladder and biliary passages—Medical discussion, Surgical discussion

Jaundice

Tumors of the colon

Diseases of the rectum including tumors

Intestinal obstruction

Diverticulitis

Colitis, amebiasis, functional disturbances of the colon including mucous colitis

Hirschsprung's Disease

Lymphogranulomata

Clinical methods and differential diagnosis

Technique of the gastro-intestinal series

Laboratory examinations

The profession generally is invited to attend.

A complete program and registration blank may be

secured by addressing—Dr. Frederick P. Reynolds, The New York Academy of Medicine, 2 East 103d Street, New York City.

REPORT AND NOTICE OF MEETINGS

ELECTION OF DELEGATES TO THE NEW ENGLAND MEDICAL COUNCIL

At the Annual Meeting of the Connecticut State Medical Society, Dr. Walter R. Steiner, President, Dr. Charles W. Comfort, Jr., Secretary, Dr. George Blumer, Dr. Daniel Sullivan and Dr. Thomas P. Murdock were elected delegates to the New England Medical Council.

AMERICAN CONGRESS OF PHYSICAL THERAPY

The thirteenth annual scientific and clinical session of the American Congress of Physical Therapy will be held in Philadelphia at the Bellevue Stratford, September 10, 11, 12, 13, 1934.

On Wednesday evening, September 12, a joint session will be held with the Philadelphia County Medical Society.

Special features will be the scientific and technical exhibits and the small group conferences. The latter have been arranged for Tuesday morning. Every specialty of medicine and surgery will be represented. The technical application of physical measures will be demonstrated. The general sessions will be taken up with symposia on cancer, arthritis, poliomyelitis, industrial surgery, etc.

Friday, September 14, has been set aside for hospital teaching clinics which will be held in the leading institutions of Philadelphia.

Send for preliminary program. Address: American Congress of Physical Therapy, 30 North Michigan Avenue, Chicago, Illinois.

SOCIETY MEETINGS, CONGRESSES AND CONFERENCES

June 7—Faulkner Hospital Clinical Meeting will be held at 5 P.M.

June 7, 8, 9—Annual Meeting of the American Association for the Study of Gout will be held in Cleveland, Ohio. For details of the program apply to Dr. J. R. Yung, Terre Haute, Ind.

June 11—American Medical Golfing Association will meet at the Mayfield Country Club in Cleveland. For details see page 1090, Issue of May 17.

June 11-12—The American Proctologic Society will meet at the Hotel Cleveland, Cleveland. For information address the Secretary, Frank G. Runyon, M.D., 1361 Perkiomen Avenue, Reading, Pa.

June 12—South End Medical Club will meet at the office of the Boston Tuberculosis Association, 554 Columbus Avenue, Boston, at 12 noon.

June 12—Boston Society of Anesthetists will meet at the Hotel Kenmore, Boston. For details write Dr. Philip D. Woodbridge, 605 Commonwealth Avenue, Boston.

June 12—American Heart Association will meet at 9:30 A.M. at the Cleveland Hotel, Cleveland, Ohio.

July 24-31—The IVth International Congress of Radiology will be held in Zurich under the presidency of Professor H. R. Schenk. General Secretary Dr. H. E. Walther, Gloriastrasse 14, Zurich.

August 18-September 30—Medical Study Trip to Hungary. See page 975, Issue of May 10.

September 3 6—American Public Health Association at Pasadena, California Dr J D Dunshee, Chairman, Local Committee on Arrangements

September 4, 5, 6—International Union Against Tuberculosis. For information address the National Tuberculosis Association, 450 Seventh Avenue New York City

September 10, 11, 12, and 13—American Congress on Physical Therapy See page 1240

October 22 - November 2—1934 Graduate Fortnight of the New York Academy of Medicine See page 1240

October 31 November 2—Massachusetts State Nurses Association, Hotel Statler Boston. For information write Miss Helene G Lee R N 420 Boylston Street, Boston

BOOK REVIEWS

Medicine A Voyage of Discovery By Josef Löbel
334 pp New York Farrar & Rinehart, Inc \$3 00

This volume is a popular account of medicine from the point of view of one who not only has a wide knowledge of the subject but is also trained in philosophy. The author is not known in this country. He writes in a pleasant style and the book is distinctly superior to certain other books of a similar character which have been published in recent years. There are however a number of gross mistakes in historical facts, the typography leaves a good deal to be desired, and the appearance of the book is somewhat marred by the use of the symbol of Mercury in place of the caduceus. Of local interest is a detailed account by a Berlin surgeon of an operation by Dr Harvey Cushing at the Peter Bent Brigham Hospital, a few years ago.

Although this book can be highly recommended for its broad base and sound philosophy with its pleasant sense of humor, one wishes that the author had been a little more careful in his historical references and that the volume had been placed with a publisher who had a more adequate sense of producing a fitting book free from minor errors.

The Elements of Experimental Embryology By Julian S Huxley and G R De Beer 514 pp
Cambridge The University Press \$7 00

This book correlates a great amount of factual material concerning embryological development in various species. Systematizing as it explains it unfolds a beautiful pattern of meticulous organization as the reader progresses through its pages. It does for embryology what the philosopher performs with the facts of science rescuing principles from a great mass of seemingly disorganized and unrelated experiments. This is attested by the bibliography of 36 pages which appears at the end of the book.

Proof for the deductions made by the authors is derived wholly from biological experiments. Where as the work includes implications of the physiological it does not answer the why and wherefore of the phenomena described in terms of specific biochemical reactions. It therefore builds a framework, the substance for the clothing of which must still be supplied.

Tissues in the early embryo tend to differentiate according to their position in response to local in-

fluences called "organisers" or groups of directing cells. In this way mosaic fields are established throughout the embryo each of which has a dominant influence in its own region and a modifying influence upon its neighbors. Because mosaic fields are not precise morphological units but overlap one another (gradient fields) a wide variation in response may occur by changes in external and internal forces. Very young tissues are especially susceptible to changes in environment, but as the mosaic field becomes more firmly established the range of reaction lessens.

The book is written in a clear style and contains many well chosen illustrations.

An Outline of Immunity By W W C Topley 415 pp
Baltimore William Wood and Company \$6 00

This book is an excellent presentation of scientific medicine. The value of its contents lies in the various fields of immunology, tissue resistance, treatment of disease, prevention of disease presented intelligently. There is not any rationalization empiricism or individualism between its covers. It is a pleasure to study the book's contents.

Anyone in the practice of medicine or surgery, fourth year medical students and internes can learn from this book.

It is so sound and clear, well presented and complete that it stimulates one to combine its principles with the daily practice of medicine and surgery.

The chapters entitled "The Application of Immunity in Treatment" and "The Application of Immunity in Diagnosis" are of great value and practical.

This book can stand on its own merits.

Treatment of the Commoner Diseases By Lewellys F Barker 317 pp
Philadelphia J B Lippincott Company \$3 00

This book is based on a series of postgraduate lectures designed to bring to the general practitioner the modern methods of treatment of common ailments. One has learned to look forward to the usually brilliant writings of Dr Barker with keen anticipation, but this book is a distinct disappointment.

Despite his qualifying statement in his preface that "I shall make no attempt to discuss fully and completely any topic whatever" it appears to the reviewer that in the face of mounting medical publications a new book requires more justification than merely the fact that it is an outgrowth of a series of lectures. The result is an extremely fragmentary work which in the long run defeats its purpose. Throughout the book there is a tendency to use a complex terminology.

There are frequent allusions to proprietary preparations using the trade name where a pharmacopoeial product may be used and which in some cases have actually been rejected by the A M A as being

of secret composition or unacceptable for other reasons. The book is burdened with many statements of dubious acceptability or partial or complete inaccuracy. Thus he alludes (p 22) to the great increase in the large mononuclears in acute infectious mononucleosis without reference to the usually accepted fact that the lymphocytes are predominantly increased and any increase in monocytes is a concomitant feature.

For foreign protein shock therapy we are aware, of course, of the use of dead typhoid bacilli. The author recommends a dose "beginning with, say, 500,000,000 dead bacilli in $\frac{1}{2}$ cc of fluid, repeating the same dose in one week and at the end of the second week giving double this dose" (P 28). This strikingly resembles the routine practiced in typhoid immunization in which instance the organisms are injected subcutaneously or intramuscularly and the reactions are chiefly local. Any systemic reactions usually prove to be mild and unimportant. The primary intention in pursuing shock therapy is the creation of the reaction recognized as due to the foreign protein when intravenously injected. The route of injection is not specified. The dose recommended is at least ten times the usual initial dose and the augmentation of the subsequent doses is out of proportion. He also advocates the use of fresh sterilized milk without mentioning the need for removing the fat from the milk.

Cardiologists are skeptical regarding the efficacy of camphor in oil as a vasomotor stimulant. Strophanthin is advised far too frequently without sufficient stress on the potential dangers. The reviewer believes that the myth regarding nutrient enemata (other than salt solution) seems pretty well exploded. Discussing the treatment of pneumonia not many clinicians will subscribe to the following: "For the support of the heart, it is a good rule to begin the administration of small doses of digitalis on the very first day of the disease. In patients who have good hearts to begin with, $\frac{3}{4}$ grain of powdered digitalis leaf in pill form twice a day will suffice, though if the pneumonia occurs in a patient whose heart was diseased before the attack, it is wise to begin with a grain and a half of powdered leaf administered from three to five times in the 24 hours for the first two days. In addition to digitalis, 20% camphorated oil (5 or 10 cc.) should be injected into the gluteal muscle twice a day."

The statement that, "according to the type of pneumococcus found to be the cause of the pneumonia we inject a corresponding immune serum (type I, type II, or type III), giving 100 cc every eight hours" certainly warrants correction in that there is no immune serum for type III and since the use of the concentrated sera the dose of 100 cc is unnecessary.

The use of 1 to 3 grains of phenylhydrazine once a week in the treatment of polycythemia is essen-

tially meaningless. If there is any disease where individualization and correlation of treatment to blood counts is essential, it is this disease. Is there any value to "15-20 drops of 1:1000 solution of adrenalin given by mouth 3 times a day" (p 143) in bleeding gastric ulcer? In the treatment of hemorrhoids mention of the use of mineral oil is entirely omitted. Paravertebral anesthesia for gallstone pain is hardly a procedure to recommend to general practitioners, as a matter of fact such practice must be excessively rare.

Individually estimated many of the issues raised are of minor importance but in the aggregate they tend to vitiate the value of the book and it seems incredible that it has come from the pen of this master.

Contagious Diseases What They Are and How to Deal with Them By W W Bauer First Edition
218 pp New York Alfred A. Knopf. \$2.00

This very readable book of two hundred pages gives the lay reader the facts which he or she should know, and at times may badly want to know, about the communicable diseases. Both in common sense and in scientific data it is as accurate as our present knowledge of its subject matter permits, the style is easy and frequently humorous, yet obviously the information imparted is authoritative.

The first chapter is a primer of bacteriology, from this introduction the book proceeds to a discussion of quarantine regulations and the home care of those sick with communicable disease, descriptions of these diseases and the obvious duty of prevention, both by specific immunizations, where those are possible, and by the avoidance of contacts. The question of immunization is temperately dealt with, the author has allowed no unwarranted enthusiasms to warp his judgment or prejudice the considered results of his experience. Intended for the lay individual, this book contains information which the busy practitioner himself may find of value in his daily rounds.

Brucella Infections in Animals and Man Methods of laboratory diagnosis By I. Forest Huddleson
108 pp New York The Commonwealth Fund

The increased recognition of undulant fever in man and the great economic importance of contagious abortion in animals is ample justification for the publication of this monograph, which deals essentially with the methods of laboratory diagnosis of the infection. The work is largely concerned with methods of serological diagnosis although some attention is paid to the pathology of the conditions and the bacteriological features of the group. Several excellent illustrations add to the value of the paper, as does a well-chosen bibliography. For those pathologists and bacteriologists coming in contact with Brucella infections, this monograph will prove exceedingly valuable.

The New England Journal of Medicine

VOLUME 210

JUNE 14, 1934

NUMBER 24

The Massachusetts Medical Society

THE IMPORTANCE OF DISTURBANCES IN NUTRITION IN EDEMATOUS STATES*

BY WARFIELD T. LONGCOPE, M.D.†

ONE of the most notable contributions that has been made to medicine during the last quarter of a century is the discovery of the accessory food factors the vitamins. With a comprehension of the significance of the vitamins has come an increasing interest in the subject of malnutrition in its broadest sense. As a result of innumerable investigations the tendency has grown within recent years to gather into one group a number of disease states that have been defined somewhat loosely as the deficiency diseases. The deficiency which is common to all of them is an inadequate amount of some substance in the food which is necessary to the body for its proper nutrition, or the inability of the body to absorb, or to prepare for absorption, these necessary substances even though the diet contains sufficient quantities of them.

The disturbances in nutrition that result from these defective diets or from the inability to utilize the constituents of a completely adequate diet are numerous and very varied. It is not necessary to dwell upon those well-defined diseases, such as scurvy, which are caused by the lack of specific vitamins, or to emphasize in this gathering the brilliant work of Minot and Murphy and of Castle on pernicious anemia. It would not be amiss, however, to recall the fact that it is not ordinarily an inadequate diet that causes pernicious anemia but the inability of the stomach to form the necessary factor, present in normal liver, that is essential to the proper formation of red cells.

Although pernicious anemia, pellagra, sprue, possibly the idiopathic steatorrhea or celiac disease, and even hunger edema possess individual characteristics that give them the distinction of clinical and etiological entities, there are considerable numbers of patients who suffer from profound disturbances of nutrition in which the clinical picture is not so clear cut, and in which, in addition to malnutrition, several features peculiar to two or more of the above diseases may be combined in a most confusing manner. The variations in symptoms and signs may be numerous. There may be great loss of weight, anemia

either of the microcytic or macrocytic type, persistent diarrhea, glossitis, steatorrhea, skin eruptions, abnormalities in mineral metabolism and alterations in the exchange of fluids, so that in some patients there is dehydration of the subcutaneous tissues while in others such extensive edema that it becomes one of the predominant features of the illness.

The complexity of the situation, as we have observed it in several patients during the last few years, the comparative frequency of edema in mild states of malnutrition, and the presence of edema in some forms of dietary deficiency under unexpected circumstances have led us to pay some attention to these conditions.

Since a large part of our work as physicians must unfortunately be devoted to the repair of function rather than to the restitution of damaged organs, it is desirable to analyze in some detail the cause of symptoms in the hope that we may find some way of eliminating them or of shedding more light on the entire disease process. It is with this idea in mind that I would like to discuss the question of nutritional edema and to describe the observations that we have made in a few patients suffering from this condition. In none of these patients was there disease of the heart or kidneys, so that for the moment we are not concerned with either cardiac or nephritic edema.

It is not my intention, and it is quite beyond my province, to discuss the complicated problem of edema in general. It is necessary, however, to state briefly some of the views that are now generally held concerning the different factors that may, in one way or another, be held responsible for the formation of subcutaneous edema or effusions into the serous cavities.

According to most authorities it is supposed that at least four factors may be concerned with the accumulation of abnormal amounts of fluid in the connective tissue spaces or serous cavities or, in other words, with the production of edema. The first of these is the state of permeability of the capillary or vessel wall. Injury of the vessel wall allows fluid to escape into the surrounding tissues. Inflammatory edema and angioneurotic edema arise in this manner. The second is concerned with the quantitative and qual-

*The Shattuck Lecture delivered at the Annual Meeting of the Massachusetts Medical Society, Worcester, June 4, 1934.
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itative relationships between the electrolytes in the blood and tissue spaces, the third is the elevation of hydrostatic pressure within the capillaries or small blood vessels, which is of particular importance in the formation of edema in congestive heart failure, and the fourth is the amount of colloid osmotic pressure exerted by the plasma proteins. The last three of these forces act in relation to somewhat equivalent conditions in the tissue spaces, and it is largely a disturbance in the equilibrium normally maintained between the intravascular and extravascular forces that leads to a reversal of the normal exchange of fluids and electrolytes, and that determines the accumulation of fluid, as dropsy, in the tissue spaces or serous sacs.

Before considering the matter in its clinical aspect it is necessary to dwell for a moment on one theory of the formation of edema to which I shall have frequent occasion to refer. This is the importance of the relation of the colloid osmotic pressure of the proteins of the blood plasma to the formation of edema. Starling¹ first propounded the theory that the filtration of fluid from the blood vessels to the tissue spaces depended upon the balance between the hydrostatic pressure within the blood vessels and the colloid osmotic pressure of the plasma, the former tending to force fluid from the blood vessels into the tissues, the latter tending to hold fluids within the blood vessels. The theory has been developed experimentally by Govaerts² and again recently by Landis³, and it has been supported by the work of Leiter⁴ and of Barker and Kirk⁵, it upholds Epstein⁶ in his conception of the origin of nephrotic edema and it is dealt with fully by Van Slyke and Peters⁷ and by many investigators who have recently devoted considerable attention to this phase of the problem.

From the extensive investigations that have been made on this subject it is generally assumed, according to the work of Moore and Van Slyke that when the total plasma proteins fall from their normal level of 60 to 80 grams per cent to 55 grams per cent, edema is likely to develop. This is due to the resulting decrease in colloid osmotic pressure of the plasma. The most important protein, in this respect however, is the albumen, for it not only forms about 60 per cent of the plasma protein but is estimated to have a colloid osmotic pressure, according to Govaerts² of 55 mm. of Hg per gram, whereas globulin forming only about 40 per cent has a colloid osmotic pressure of only 14 mm. of Hg per gram. Thus decrease of the plasma albumen is much more effective than decrease of plasma globulin in leading to a reduction in the colloid osmotic pressure of the plasma.

Therefore it is conceivable that any abnormality which leads to a continuous loss of albumen from the body may result, sooner or later, in a serious depletion of serum albumen

and consequently predispose to the formation of dropsy. A familiar example is the edematous form of Bright's disease in which large amounts of serum albumen are lost daily in the urine. There are other ways, however, in which the body may lose large amounts of protein, for this may occur after repeated hemorrhages, from draining wounds, through empyema sinuses, from chronic inflammations of the bowel, and from diseases of the gastro-intestinal tract that interfere with the normal absorption of protein. Though these may be of secondary importance, they must occasionally be taken into consideration.

Undoubtedly the most important and the commonest method of depriving the body of protein, however, is through a prolonged or excessive reduction of protein in the diet. Though it has only recently been discovered, as I shall point out, that there is a close connection between protein starvation and the formation of edema, the occurrence of dropsy in states of advanced undernutrition has attracted attention for centuries⁸. It has been described as occurring in epidemics, and for this reason has been called "epidemic dropsy". The descriptive terms used in the literature serve in themselves to indicate the conditions under which it was likely to occur, for we find it referred to as "war edema", "prison dropsy", "hunger swelling" and "deficiency edema". There are interesting accounts of the dropsy which was widespread in the French Army during the Wars of the Sixteenth Century and which was common in the armies of Napoleon. The interesting observation was also made that the swelling was much greater in the soldiers on march or on duty than in those too sick to move about. Many children confined in Paris during the Siege of 1870-71 became edematous, and in the great famines of India and Russia the people have been described as "swollen with hunger".

Edema of both children and adults was very common in the central countries of Europe during the war and received an exhaustive study by Schittenhelm and Schlecht⁹. They observed that the edema was marked when the patients were up and about, but that it was likely to disappear when they were put to bed, and they pointed out that the diet was largely fluid, grossly deficient in protein and very rich in salt. Shortly after the war Maver⁸, after making a survey of these types of edema, came to the conclusion that the disease did not seem to be a deficiency disease, in the sense that the diet was deficient in one or more specific unknown constituents, such as the vitamins, but in a broader sense it was a deficiency disease since the diet was very low in total calories and was lacking particularly in protein. Denton and Kohman¹⁰ had already shown that a large proportion of rats fed on a diet of carrots developed edema when nitrogen in the diet was reduced, and the necessary calories substituted by

the addition of some non-nitrogenous food stuffs such as carbohydrate and fat, while at about the same time Kohman¹¹ had been able to prevent the edema occurring in rats which were fed on carrots but supplied with adequate amounts of vitamins by adding a sufficient quantity of protein to the ration without changing the caloric value. Frisch, Mendel and Peters¹² were finally able to demonstrate that the one necessary component of the food which would prevent rats from showing edema during similar feeding experiments was protein. They also found that restriction of the protein of the food of the rats was accompanied by a reduction in the proteins of the plasma, and that there was a close correlation between the degree of the reduction of plasma proteins and the occurrence of edema.

These experiments have opened a way for the study of many types of edema in which the depletion of plasma proteins may come from the privation of protein rather than from the loss of protein from the body. Though the total plasma proteins and their fractions have been determined in a great number of diseases¹³, it is to Peters¹⁴ and his collaborators that we are particularly indebted for demonstrating the frequency with which low plasma proteins and especially low values for plasma albumen are associated on the one hand with malnutrition and, on the other, with edema. They have shown that the three conditions, malnutrition, hypoproteinemia and edema may be related in diseases as varied as diabetes mellitus, neoplasms, infections of various sorts, anemia and disease of the liver.

Nutritional diseases of all sorts are prevalent in China, and the frequent occurrence of edema in these patients induced Weech and Ling¹⁵ to investigate the relationship between the occurrence of dropsy and the level of plasma proteins in eighteen patients. The diets of these patients were deficient in all respects, but particularly in the protein food stuffs of animal origin. They found a fairly close correlation between the level of total plasma proteins and the development of edema, but the relationship was most definite between the albumen deficit and the dropsy. They state that edema was never absent, except in one case, when the serum albumen was less than 2.5 grams per 100 cc and was never present when, during convalescence, the serum albumen was greater than 2.9 grams per 100 cc of plasma, the normal range in their experiments being 3.6 grams to 5.0 grams of serum albumen per 100 cc of plasma. Youmans¹⁶ and his collaborators have estimated the plasma proteins in thirty-one patients who suffered with mild edema supposedly due to chronic malnutrition. In the majority of these patients the total plasma proteins were normal, but in many the plasma albumen was slightly, though not remarkably, reduced below the nor-

mal. It was only in an occasional instance that the total plasma proteins, the plasma albumen or the colloid osmotic pressure was lowered to what is generally regarded as the critical level for the appearance of edema. Youmans raises the question, on this account, as to whether there might be additional factors in these patients that contribute to the formation of edema.

Though lack of protein in the food and subsequent hypoproteinemia seem to form the basis for the production of nutritional edemas, it is undoubtedly necessary to consider whether there may not be accessory factors that must be taken into account, for discrepancies are observed and profound nutritional disturbances may be seen without edema, and edema may be present with relatively high plasma proteins^{16, 17}.

It has repeatedly been observed that when poorly nourished people or animals drink large quantities of water the edema increases^{6, 9, 10, 11, 12}, and it has been pointed out that this is one of the essential features in the formation of war dropsy and famine edema. Perhaps of even more importance is the relation which the use of sodium chloride and sodium bicarbonate bears to the formation of these edemas¹⁸, for it has been shown^{15, 17} that the administration of sodium chloride and sodium bicarbonate to patients with nutritional edema leads to a rapid increase in the dropsy and that the administration of sodium chloride or sodium bicarbonate to dogs with experimentally induced hypoproteinemia precipitates or exaggerates the edema^{19, 20}. It seems probable too, both from the repeated observations made upon the war and famine edemas and from more exact studies recently reported²¹ that the erect position exaggerates the edema when it is present, or may be the determining factor in causing the appearance of dropsy when the edema is, so to speak, latent. Mild degrees of heart failure may also exert an important influence in exaggerating or precipitating edema, and since the symptoms of myocardial failure are common in severe anemia, this factor must also be taken into account in some instances of nutritional dropsy. The post-operative nutritional edema in which at times the dropsy may reach serious proportions, prevents a most complicated problem. The recent studies of Jones, Eaton and White²⁴ indicate how many accessory factors must be taken into consideration. Nitrogen starvation is of prime importance, but the administration of excessive amounts of water and of sodium chloride, the drainage of serous material or the presence of infections may be the determining factor in the actual appearance of edema, may exaggerate it, or serve to prolong the dropsy.

The occurrence of edema associated with improper digestion or absorption of protein has received much less attention than the starvation edemas. Yet edema of nervous system

itative relationships between the electrolytes in the blood and tissue spaces, the third is the elevation of hydrostatic pressure within the capillaries or small blood vessels, which is of particular importance in the formation of edema in congestive heart failure, and the fourth is the amount of colloid osmotic pressure exerted by the plasma proteins. The last three of these forces act in relation to somewhat equivalent conditions in the tissue spaces, and it is largely a disturbance in the equilibrium normally maintained between the intravascular and extravascular forces that leads to a reversal of the normal exchange of fluids and electrolytes, and that determines the accumulation of fluid, as dropsy, in the tissue spaces or serous sacs.

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and consequently predispose to the formation of dropsy. A familiar example is the edematous form of Bright's disease in which large amounts of serum albumen are lost daily in the urine. There are other ways, however, in which the body may lose large amounts of protein, for this may occur after repeated hemorrhages, from draining wounds, through empyema sinuses, from chronic inflammations of the bowel, and from diseases of the gastro-intestinal tract that interfere with the normal absorption of protein. Though these may be of secondary importance, they must occasionally be taken into consideration.

Undoubtedly the most important and the commonest method of depriving the body of protein, however, is through a prolonged or excessive reduction of protein in the diet. Though it has only recently been discovered, as I shall point out, that there is a close connection between protein starvation and the formation of edema, the occurrence of dropsy in states of advanced undernutrition has attracted attention for centuries⁸. It has been described as occurring in epidemics, and for this reason has been called "epidemic dropsy". The descriptive terms used in the literature serve in themselves to indicate the conditions under which it was likely to occur, for we find it referred to as "war edema", "prison dropsy", "hunger swelling" and "deficiency edema". There are interesting accounts of the dropsy which was widespread in the French Army during the Wars of the Sixteenth Century and which was common in the armies of Napoleon. The interesting observation was also made that the swelling was much greater in the soldiers on march or on duty than in those too sick to move about. Many children confined in Paris during the Siege of 1870-71 became edematous, and in the great famines of India and Russia the people have been described as "swollen with hunger".

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heart was normal in size, there were no murmurs, and the blood pressure was 110/70. The urine was clear, specific gravity 1.020, acid, there was no sugar or albumen but large amounts of acetone and diacetic acid. The Hb was 65 per cent, the red blood cells 3,630,000, leucocytes 9,140 with 88 per cent polymorphonuclears. The total plasma proteins were 4.60 grams per cent. She was given a transfusion of 500 cc of citrated blood and feeding was started by nasal catheter. The edema increased the watery stools were very numerous and she became lethargic. She was then given continuous vena clysis with approximately 2400 cc. of salt solution in one day. The edema increased rapidly and the plasma proteins fell to 4.34 grams per cent. The vena clysis was stopped. Salyrgan and theocin had no effect upon the edema. An attempt was then made to increase the amount of nourishment and to raise the daily intake of protein to 110 grams. When this was done improvement set in gradually, and though the diarrhea which was found to be due to Bac dysenteria Shiga persisted for months, the edema gradually subsided, the plasma proteins rose slowly and within six months the patient left the hospital entirely well.

Table 1 shows the relation between the de-

TABLE 1
PLASMA PROTEINS

Date	N I F Edema	Total P Gm %	S Alb Gm %	S Glob Gm %
10/10/32	+++	4.60		
10/11/32	++++	4.34	1.95	2.39
11/9/32	+++	4.58	2.34	2.24
1/17/33	++	4.63		
2/5/33	0	5.25		
2/7/33	0	5.38	2.58	2.80
3/23/33	0	5.31		

gree of edema and the level of the plasma proteins.

It is to be noted in this case that the infusion of physiological salt solution was followed by an immediate increase in edema. This result serves as an illustration of the effect of accessory factors upon the production of edema in patients with hypoproteinemia. It has already been pointed out that edema may be increased in starvation by ingestion of excessive amounts of water or by the administration of sodium chloride or sodium bicarbonate, and it seems most probable that the anasarca was exaggerated in this patient by the administration of large amounts of salt solution. The comparatively slow recovery may well be attributable to the difficulty in feeding this patient sufficient quantities of food and to the difficulty in controlling diarrhea. With the continuous loss of water through the stools and on a salt poor diet, the patient became finally free from edema, while at rest in bed, even though the concentration of plasma proteins was slightly below the critical level at which edema is likely to occur.

The history of the next patient who was profoundly anemic, illustrates some of the most serious effects of malnutrition as well as the

fact that edema in such patients is not necessarily connected with the degree of anemia.

The patient was a married white woman of twenty-four (Unit 27215) who came to the Johns Hopkins Hospital on October 2, 1929 from Tennessee, complaining of diarrhea, stomach trouble and sore mouth, which she had had intermittently for three years and nine months. Previously she had been well and active though she had at times been nervous. Her best weight had been 140 pounds. Her present illness started after the birth of her youngest child on Dec 10, 1926. Fifteen days later her mouth became sore, her tongue fiery red and blistered and her mouth and gums swollen. These symptoms persisted for three months and then were accompanied by anorexia, abdominal pain, nausea, vomiting, excessive diarrhea, weakness and pallor, all of which lasted for six months. At the end of this time there was a complete remission of all symptoms for ten months. Her diet consisted largely of eggs, milk, and toast. In May 1929, about six months before admission the original symptoms re-appeared but in addition there were for the first time bleeding from the gums, tingling in the fingers and toes, cramps in the muscles of the legs, and during the latter part of her illness swelling of the hands and feet. She had eaten during these six months practically nothing except tea and toast, and there had been a loss of about forty pounds in weight. On admission to the hospital she was extremely pale and weak. The temperature was 102.5°. There was well marked anasarca with bleeding from the gums and hemorrhages in the fundi. The tongue was beefy red and showed vesicles. The lungs and heart showed nothing remarkable. The blood pressure was 102/58. The abdomen was distended and the liver readily palpable. The vibratory sense was preserved and the sense of position intact. The red blood cells were 850,000. Hb 27 per cent, lets 1280, and platelets 30,000. The red blood cells showed pronounced anisocytosis, poikilocytosis and macrocytosis. Except for the presence, occasionally, of traces of albumen the urine was normal. Wassermann reaction was negative. The gastric analysis showed free HCl after histamin, but none before.

The charts (figs 2 and 3) show the course of her illness.

It is to be noted particularly that the anasarca is marked, the anemia grave, the evidences of purpura quite marked, the diarrhea persistent for some days and that tetany occurred. The examinations of the blood showed that the non-protein nitrogen was remarkably low (16 mg per cent), the plasma proteins greatly diminished (3.95 grams per cent), and the calcium and phosphorus reduced (Ca 6.8 mg per cent, P 2.1 mg per cent). It was obvious that the patient had been deprived not only of proteins and vitamins, but of such minerals as calcium and phosphorus. The deprivation had come from partial starvation and perhaps to some extent also from loss of these materials through the stools. On a high calory diet containing 200 grams protein, to which was added liver extract, cod liver oil and large amounts of calcium and phosphorus, the patient improved rapidly. During one period of a few days the amount of salt in the diet was increased whereupon the edema became much more marked. When the salt was withdrawn the edema decreased rapidly. Over one period of twelve

common in many diseases of the gastro-intestinal tract Landis and Leopold²² have reported a case of tuberculous enteritis in which edema was associated with low colloid osmotic pressure of the plasma proteins Transfusions of blood and a high protein diet were followed by a subsidence of the swelling and a noticeable increase in the colloid osmotic pressure of the serum

I would now like to draw your attention to some rather unusual examples of nutritional edema The first case is one of amebic dysentery complicated by a remarkable degree of anasarca appearing during the course of the attack

The patient was a colored laborer forty seven years of age (Unit 45358) who was admitted to the Johns Hopkins Hospital on September 14, 1932 complaining of diarrhea of five months duration and swelling of the legs of two months' duration. Fifteen years previously he had had a similar attack of diarrhea at which time his legs were swollen. In the interval he had been quite well There had been no symptoms to suggest heart or kidney disease After a dietary indiscretion five months before admission he had suddenly developed a watery bloody diarrhea which had persisted up to the time of his admission to the hospital At the onset there was abdominal pain, but he had not had chills, and had not noticed fever or night sweats For three months he had had swelling, beginning in the ankles and extending up the legs until within a few days of admission it had involved most of his body During the greater part of his illness he had been up and about and at no time had he restricted his diet for he had eaten much the same food as when he was well He appeared to be a well-developed somewhat pale Negro with a temperature of 98.6°, pulse 70, respirations 18 He showed widespread anasarca with soft pitting edema over the legs, abdomen back, chest and arms and râles at the bases of the lungs The heart was normal in size, the sounds were clear except for a soft systolic murmur at the pulmonary area the blood pressure was 150/98 The spleen and liver were not palpable but there was evidence of ascites There was moderate anemia, the Hb being 68 per cent, the red blood cells 3,550,000 The leucocytes were 8,400 with 64 per cent polymorphonuclears The urine had a specific gravity of 1.011 showed no sugar, a faint trace of albumen and no casts The Wassermann reaction was negative The stools showed blood mucus and many active amebae histolyticae The total serum proteins were 3.77 grams per cent*

The chart (fig 1) shows in outline the course of the illness It is to be noted that the edema is associated with a remarkably low total plasma protein with great reduction in the plasma albumen The estimated colloid osmotic pressure of the plasma was only 11.12 mm of Hg compared with a normal of about 26 On rest in bed, a low residue salt-poor diet, containing 120 grams of protein, and a course of yatren, the improvement was rapid The diarrhea soon ceased, the edema subsided as the blood proteins increased, the anemia improved, and within twenty-four days after admission the patient

was practically well, the total proteins had increased to 6.39 grams per cent, a normal figure, and the calculated colloid osmotic pressure was doubled (21.47 Gm per cent) There appeared to be a close relationship between the low plasma proteins and the occurrence of anasarca in this patient On the other hand the manner in which the body was deprived of protein is not quite clear Although the man stated that he had eaten his customary amount of food including meat, the diet may have been somewhat inadequate It is more probable, however, that protein was not properly digested or was not absorbed in adequate amounts, for even the supernatant fluid of the stools was found to contain six grams of protein per liter Some protein must also have been lost in the blood in the stools

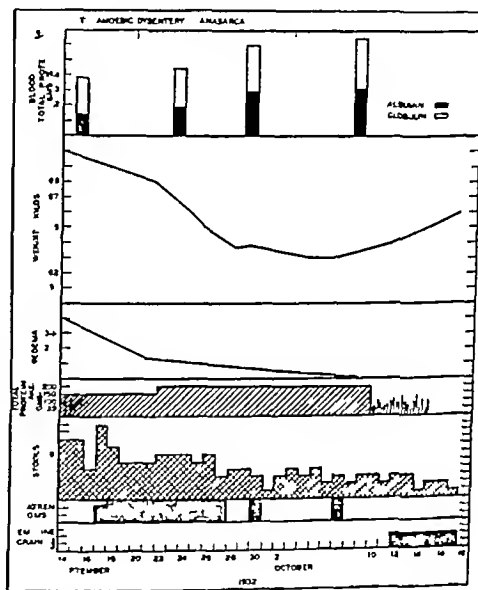


FIG 1 Case 1 Showing the changes in plasma proteins the variations in weight the loss of edema the total protein in the diet, the number of stools per day and the treatment.

In the next patient the cause for the protein deprivation was quite obvious

She was a white woman of fifty six (Unit 45759) who was admitted to the Johns Hopkins Hospital on October 8 1932, complaining of weakness, anorexia, diarrhea and sore tongue She had generally been very healthy until four months before admission when she had slipped and sustained a fracture of the neck of the left femur She was taken to a hospital, placed in a splint, and because of constipation given frequent enemata Food disagreed with her she had nausea and vomiting, and two months after her injury developed profuse and intractable diarrhea She ate almost no food became emaciated, and a few days before admission to the Johns Hopkins Hospital her tongue became very sore On admission she appeared quite ill with a temperature of 98° F, pulse 116 and respirations 20 She had lost much weight, but the legs were edematous The tongue was beefy red and showed small ulcers The lips and skin were very pale the lungs were clear to percussion and auscultation, the

*The plasma proteins were determined in a few instances by the refractometric method but as a rule Howe's method was employed and the estimations were made under the direction of Dr. Mary V. Bnell

Howe J E The determination of proteins in blood—A micro method J Biol. Chem. 49 109 1921

chloric acid. The case presents many features of interest and will probably be reported later in detail, but it serves at this time to illustrate the fact that the anemia was dependent upon the lack of liver whereas the edema, which was related to the hypoproteinemia, resulted from protein starvation.

In many forms of anemia and especially in pernicious anemia there may be moderate to severe grades of edema. Peters and Eisenman¹⁴ found that in this group of cases edema was quite regularly accompanied by a reduction of plasma proteins, though in some instances edema was prone to occur when the plasma proteins were at a comparatively high level. They remark upon the readiness with which these patients tend to develop edema. It has occurred to us in studying the appearance of edema in patients with pernicious anemia and idiopathic hypochromic anemia that in many instances accessory factors must be taken into account in these patients. As the anemia progresses whether this be pernicious anemia, posthemorrhagic anemia, or the idiopathic hypochromic anemia the patient becomes short of breath, experiences palpitation and presents many of the symptoms of mild congestive heart failure. This disturbance in the circulation might readily exaggerate a tendency to dependent edema in a patient in whom the colloid osmotic pressure of the plasma is so much reduced that it approaches the critical level. Frequently the edema subsides when the patients are placed at rest in bed.

So far we have considered the occurrence and control of edema exclusively in patients who are the victims of different forms of malnutrition and food deficiencies. Whether the patient happens to suffer from pernicious anemia, sprue, persistent diarrhea, different forms of chronic dysentery, or simply inadequate amounts of food, we find that the occurrence of edema is regularly associated with prolonged deprivation or loss of protein from the body and that the presence of edema is usually a reliable sign of protein starvation, and an indication that the patient needs large amounts of protein to repair the loss. The beneficial effects of increasing the protein in the diet and the detrimental effects of administering large amounts of water and sodium chloride are illustrated by the few cases that have been quoted.

It is known that the body is capable of manufacturing its plasma proteins with considerable rapidity, and that in animals, at least, it is difficult, even by starvation for several days to reduce the total amount of plasma protein.^{23, 24} Globulin is manufactured more rapidly than plasma albumen. The question has often arisen, however, as to whether hypoproteinemia may result from some interference with the formation of plasma proteins.²⁵ Myers and Taylor²⁵ have recently described a case in which they conclude that this unusual defect did exist. The

patient, a man of fifty-one, suffered from chronic edema associated with low plasma proteins, which were present in the usual ratio. There was no disease of the heart or kidneys. There was no loss of protein through the bowel. Since the feeding of a large quantity of protein, which was absorbed, did not raise the level of the plasma proteins, it was assumed that the defect lay in the inability of the body to construct plasma proteins in normal amounts.

Unfortunately we are quite ignorant as to the method by which the plasma proteins, with the exception of fibrinogen, are formed in the body. But since there is excellent evidence to show that fibrinogen is manufactured by the liver, the suggestion has often been made, based principally upon the experimental work of Whipple and his co-workers²³, that the synthesis of blood proteins may be in part, at least, a function of this organ. It has been repeatedly observed that the plasma proteins, and particularly the plasma albumen, may be reduced in cirrhosis of the liver.^{13, 14, 26, 27} Dr. Bordley, who has been interested in this subject, has furnished me with the data which he has collected in some of our cases of liver disease. It is found that of seven cases of cirrhosis of the liver, all of whom showed ascites and edema of the lower extremities, the total plasma proteins were well below normal in six, and were either at or below 5.5 grams per cent.

TABLE 2
CIRRHOSIS OF LIVER

No.	Edema	Ascites	Total P	A/G	Alb	Glob
1	++	++++	6.12	34/66	2.08	4.04
2	+++	++++	4.72	53/47	2.5	2.2
3	+	++++	5.66	36/64	2.04	3.62
4	+	++++	4.59	44/56	2.02	2.57
5	+++	0	5.5			
6	+	++	5.6			
7	+++	+++	5.0			

in four (Table 2). In four cases in which the amounts of albumen and globulin were recorded, there was a reversal of the normal ratio, and even though the total plasma proteins were normal in amount, the plasma albumen was below normal and the calculated colloid osmotic pressure considerably reduced. The occasional recognition of definite subcutaneous edema in cases of acute yellow atrophy of the liver, many of which followed intravenous injections of arsenphenamine, led to an examination of the plasma proteins in some of these patients. Peripheral edema was noted in five out of fifteen of our cases. So far the plasma proteins have been determined in only six patients (table 3), three with and three without edema. In the three patients with edema the total plasma proteins were respectively 4.22 grams per cent, 4.12 grams per cent and 5.57 grams per cent. In the three cases without edema they were 5.94 grams per cent, 6.37 grams per cent and 7.41 grams per cent. In the last instance the plasma albumen was almost normal, 3.92 grams per cent, but in four

days (Dec 2-Dec 14) the protein intake was increased to 250 grams and the total calories to 4000. During this period there was an average daily retention of seventeen grams of nitrogen and a gain of weight of three kilos. She finally left the hospital in practically perfect health.

January, 1934 all her symptoms were exaggerated and, though she became rapidly weaker and paler and had dizziness and anorexia, there was no marked edema and only slight swelling of the ankles after exertion.

When she was admitted to the hospital for

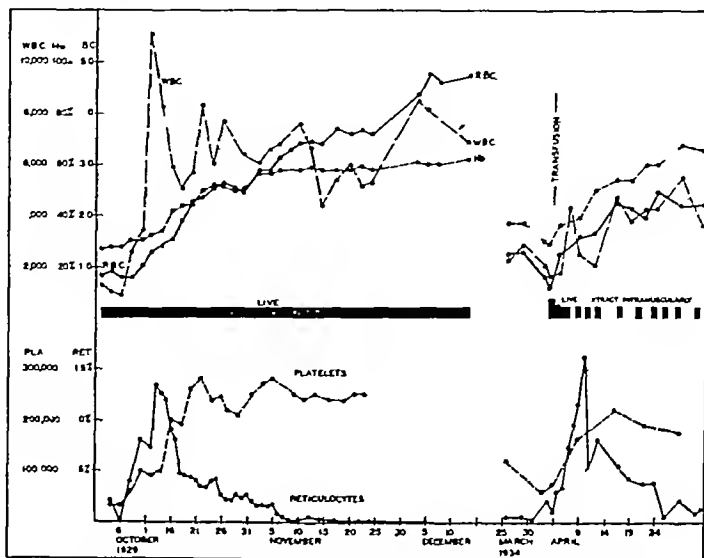


FIG 2 Case 3 Showing changes in Hb RBC WBC platelets and reticulocytes during the course of treatment by liver extract on the first and second admissions

She remained well, eating a generous diet and taking three lbs of liver weekly, until July, 1932 when liver became distasteful to her and she stopped taking it, though she continued to eat other foods. In December, 1932 there was a

relapse of her previous symptoms, and though these were partially controlled by the use of ventriculin she gradually grew worse. After the second time on April 2, 1934 her condition was much as it had been on the last occasion except for the fact that there was no actual edema, but only a slight puffiness of the eyes. The anemia was great, and on April 3 the Hb was 29 per cent, the red blood cells 600,000, the leucocytes 1,650 and the platelets 60,000. The plasma albumen was 3.97 grams per cent, the plasma globulin 2.04 grams per cent, the blood calcium and phosphorus were normal (Ca 9.4 mg per cent, P 5.0 mg per cent). The gastric analysis showed after alcohol free HCl 5, and after histamine free HCl 48. The total plasma proteins were 6.03 grams per cent. On large doses of liver extract intramuscularly (4 cc No 343 every other day) and by mouth she improved with great rapidity and by May 21 the Hb had risen to 80 per cent and the red blood cells to 2,960,000.

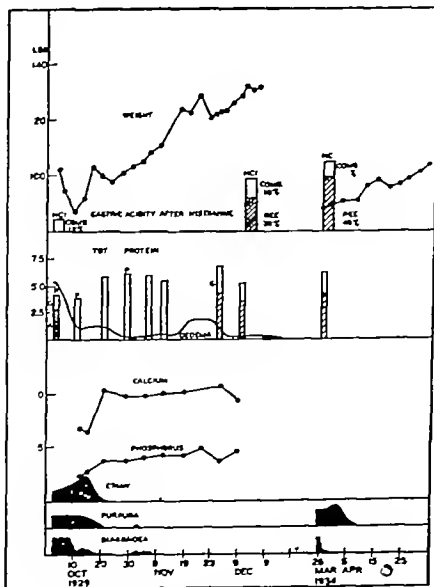


FIG 3 Case 3 Showing changes in weight, the plasma proteins, the variations in edema, the alterations in calcium and phosphorus of the blood and the course of the illness during the first and second admissions

relapse of her previous symptoms, and though these were partially controlled by the use of ventriculin she gradually grew worse. After

It is to be particularly noted that the most serious feature of the illness during the last exacerbation was this profound anemia of macrocytic type. There was also a marked reduction of platelets with purpura. Free hydrochloric acid was present in the gastric juice. There was marked loss of weight, and diarrhea, but no edema and the plasma proteins were normal. There was no conspicuous change in the blood calcium or blood phosphorus. The diet seemed to have been fairly adequate except for the absence of liver, which appeared to be absolutely essential to prevent anemia in this patient in spite of the fact that the gastric secretion contained fairly large amounts of hydro-

NEW ENGLAND BRANCH,
AMERICAN UROLOGICAL ASSOCIATIONTHE VITAL IMPORTANCE OF THE RELATION OF
HYPERPARATHYROIDISM TO THE FORMATION OF
CERTAIN URINARY CALCULI—AND ITS REMEDY*

BY RICHARD CHUTE, M.D.†

I WOULD like to say a few words on a subject which impresses me as being a true fundamental step forward in our knowledge and which I venture to prophesy in the near future will be considered by urologists as one of the most important advances made in a long time. The reason why I proclaim the importance of this matter with such assurance is that we have apparently found the definite cause for the formation of many calcium and phosphate urinary stones, especially the recurrent and multiple ones, and have also found the remedy. I refer to the rather recently discovered condition of hyperparathyroidism in relation to the very frequent formation of renal calculi in this condition. These remarks make no pretense of being either a complete description of hyperparathyroidism or a discussion of the various other factors such as infection or vitamin A deficiency, thought to be involved in stone formation, but purposely take up only hyperparathyroidism as it is related to the formation of calcium and phosphate stones. I have been fortunate enough to see a number of cases of hyperparathyroidism and to learn something about this comparatively new condition from a distinguished group of colleagues at the Massachusetts General Hospital, where more investigation and work on this condition has been done than in any other clinic in this country. The credit for the remarkable advances made is shared by the internists and the surgeons, with the lion's share going to the former,—Drs. Joseph Aub, Walter Bauer, and Fuller Albright, especially to Dr. Albright who by his very great knowledge, industry and zeal, has been the prime mover in the most recent phases of this work. At the present time there has been accumulated at the Massachusetts General Hospital a series of sixteen cases of hyperparathyroidism that have been operated upon and the abnormal tissue removed and proved histologically, the largest proved series in any one clinic in the world, I believe.

Hyperparathyroidism is a term used to describe a condition due to an excess of the internal secretion of the parathyroid glands. The source of this oversupply is found to be either a benign adenoma or hyperplasia of one or

more of the four little parathyroid glands, producing an excess of the internal secretion, known as parathormone. These glands, by means of this internal secretion, exercise a profound influence on the metabolism of calcium and phosphorus in the body, and in these cases of hyperparathyroidism with an excess of secretion, the blood calcium is raised, the blood phosphorus is usually lowered but not always, and there is a greatly increased amount of both calcium and phosphorus being excreted in the urine, associated with something which is of great interest to us of the urological fraternity, the frequent formation of calcium and phosphate stones. This stone formation is consequent to the tremendous concentration of calcium and phosphorus being excreted in the urine several times the normal amount which therefore has an abnormally great tendency to precipitate out as solid calcium phosphate and thus to form calcium phosphate stones, especially in an alkaline urine. In the Massachusetts General series, out of the sixteen cases, twelve (or 75 per cent) had stone formation in the urinary tract. Of course, since this calculus formation is due to a systemic disturbance, these calcium phosphate calculi tend to be recurrent, multiple, and bilateral, showing no particular favoritism for one kidney over the other. This is indicated by the fact that six (or 50 per cent) of these cases had bilateral calculi, and one of these cases had many recurrent bilateral renal calculi over a period of ten years. Another of these cases who was observed for six years, before the cause of his trouble was found and removed, was watched by x-rays in the act of forming renal calculi while he was under observation. He first entered with normal kidneys, normal urine and normal x-rays, but he gradually developed bilateral renal calculi and also calcification in the kidney cortex leading to severe and permanent kidney drainage. This latter is a very important and serious feature of this condition, because the formation of minute stones, concretions or calcifications in the tubules of the kidney cortex is not at all uncommon in hyperparathyroidism, and of course leads to severe and irreparable damage to the renal parenchyma and to the hopeless end-result of contracted, practically functionless kidneys. Figure 1 shows the x-ray picture of such a case in a man of thirty-three where generalized calcium deposits can be seen in the collecting tubules of both kidneys, each pyramid be-

From the Massachusetts General Hospital.
Read at the meeting of the New England Branch of the American Urological Association, February 15, 1934.

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other patients in which the plasma albumen was determined it varied from 2.5 grams per cent to 2.1 grams per cent, figures which fall well below the estimated normal

There seems to be little question, therefore, that the plasma albumen may be considerably reduced in cirrhosis of the liver and in some cases of acute yellow atrophy of the liver. In the mild forms of jaundice, on the other hand, there

TABLE 3

ACUTE YELLOW ATROPHY

No	Edema	Total P	A/G	Alb	Glob	Fibrinogen
1	+	4.22	53/47	2.23	1.98	
2	++	5.57	38/62	2.11	3.45	Decreased
3	++	4.12				
4	0	5.94	39/61	2.31	3.61	
5	0	7.41	53/47	3.92	3.48	
6	0	6.37	45/55	2.56	3.49	Decreased

seems to be little or no alteration in the plasma proteins^{13, 14}. What the significance of the reduction of plasma albumen in cirrhosis of the liver and acute yellow atrophy may be, it is not possible at the present time to state. Patients with cirrhosis of the liver are often poorly nourished.

I have tried to trace for you the study of one common symptom in an interesting group of diseases that arise from improper nutrition. These deficiency states, as we have seen, may appear in the most varied forms, either as well-defined diseases, or as a combination of symptoms. One symptom which is common to many of them is edema, sometimes progressing to a marked anasarca, and it was our intention to enquire into the cause and relief of this symptom.

It can be shown that protein is often grossly deficient in the diets of patients who suffer from these disturbances of nutrition. Diarrhea in addition is not uncommon so that the protein deficiency may be still further increased by the difficulty of absorbing protein through the gastro-intestinal tract or by the constant loss of small quantities of food protein and of blood in the stools. The deprivation of protein eventually leads to a lowering of the plasma proteins, which in turn predisposes to the formation of subcutaneous edema or is actually the cause of it. Accessory factors, such as the ingestion of considerable amounts of sodium chloride and water, the upright position and mild degree of congestive heart failure may precipitate edema or exaggerate it, but the underlying cause rests usually in the protein deficit. This particular form of deficiency may be relieved by feeding adequate or, if necessary, excessive amounts of protein. When this can be accomplished the plasma proteins may return to their normal levels and the edema may rapidly disappear.

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tively identified only by a frozen microscopic section on the spot. The size apparently has more or less to do with the amount of metabolic disturbance produced. A great deal of credit is due to Dr Oliver Cope and especially to Dr Edward Churchill of the Massachusetts General Hospital for successfully performing these operations which can be very difficult indeed. They have recently written an admirable article describing their technique and results in eleven cases of this series².

I would like to report briefly one new and interesting case in a married woman who was forty-two years old when she was first seen by my father in 1924, ten years ago. At that time he performed a left nephrectomy for calculus pyelonephrosis, the left kidney having been completely destroyed by one large stone and nine smaller ones throughout its substance.

Although the patient started passing gravel within two months of leaving the hospital she got along reasonably well for the next few years until 1930 when she again had trouble and a stone as big as a five-cent piece and three times as thick was removed from her remaining kidney. Analysis of this stone showed it to be made of calcium phosphate. A few months later she passed a small phosphate stone herself, and a year later another one. Last spring she was having trouble again and x-rays showed a small stone shadow in the lower calyx of her kidney. I had my eye out for cases of hyperparathyroidism and took her to Dr Albright who made the diagnosis of hyperparathyroidism on the basis of a high blood calcium (12.5 mg.) a low blood phosphorus and her history of repeated formation of calcium phosphate stones. She was strongly urged to be operated on but decided to go home to think the matter over. However the matter was soon taken out of her hands because her stone moved up to the ureteropelvic junction and blocked off her kidney and she came flying back into the hospital with anuria, fever, chills, vomiting, etc. After an unsuccessful attempt to drain her solitary kidney with a ureteral catheter an emergency nephrostomy had to be done to save her life. The stone could not be located at this operation and not too much time was wasted in looking for it as the patient was in a critical condition. After a few stormy days during which she had many crises she came along nicely and went home wearing a nephrostomy tube. She returned after three months and Dr Churchill removed a parathyroid tumor twice the size of a green pea. At the time of operation all the urine for twenty-four hours beforehand and twenty-four hours afterward was kept and analyzed for the excretion of calcium and phosphorus. The twenty-four hour specimen after the operation showed the expected drop in the direction toward normal of the amount of calcium and phosphorus being excreted in the urine and also her blood calcium and phosphorus both moved in the direction of normal. Meanwhile the stone had been moving slowly down the ureter and following several cystoscopic manipulations it was passed a few days after the parathyroid operation. The nephrostomy tube was removed a few weeks afterward, the wound healed up nicely and the patient has been well ever since with her calcium and phosphorus values approaching normal. She has made no more stones or gravel and I am confident that she will never do so now that her urine is no longer being flooded with calcium and phosphorus.

The first of the cases of hyperparathyroidism with urinary stone was operated upon seventeen months ago and since then a number of others, and no stones have recurred in any of these cases all of whom have been followed very carefully and their calcium and phosphorus values have remained normal.

Fifty per cent of these cases of hyperparathyroidism have had calculus formation or calcification in the urinary tract visible by x-rays. This percentage is undoubtedly too large to be true in general but is due to the fact that patients come in to the hospital for calculus trouble and then are found to be suffering from hyperparathyroidism. There are undoubtedly a great many undiagnosed cases of hyperparathyroidism walking around who are considered to have rheumatism or some orthopedic condition. Stones especially bilateral or recurring ones, should always at least bring up the question of an underlying hyperparathyroidism. It is now routine at the Massachusetts General Hospital for all stone cases to have estimations of their blood calcium and phosphorus and in this way a number of cases of hyperparathyroidism have been detected and remedied, thus preventing recurrence of their stones or future dangerous calcifications in their kidney tubules. To guard against this latter life shortening occurrence which can do the kidneys irreparable damage, it is most important to discover and cure all cases of hyperparathyroidism before this condition sets in.

This new and stimulating work concerns the formation of calcium and phosphate stones only, but it opens up an endocrinological and systemic point of view and method of attack which may give help in the further study of the causes of formation of urinary calculi of other compositions.

In conclusion, I would make an earnest plea to every urologist to consider the possibility of an underlying hyperparathyroidism in every case of urinary lithiasis, and I feel strongly that it is our duty to these patients whose well-being has been entrusted to us to give them the benefit of this newer knowledge by a careful estimation of their fasting blood calcium. Probably most of these calcium estimations will be normal, but they should not be counted as labor lost but as a duty well performed because eventually in this way, as has happened at the Massachusetts General Hospital, many patients suffering from hyperparathyroidism will be able to be diagnosed and cured, patients who otherwise might have gone on to the formation of more stones or of calcifications in the kidney tubules, resulting in irreparable damage to the kidneys and premature death.

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ing represented by a clump of minute calcium concretions. This case has been previously reported by Albright, Baird, Cope and Bloomberg¹. Recently Albright showed me in his laboratory definite calcium phosphate casts of the kidney tubules in one of these hyperparathyroid cases whose urine was loaded with calcium phosphate. These casts could be dissolved by acidifying the urine. On account of the abnormally great excretion of calcium and phosphorus, these two elements are drained away from the skeleton which consequently becomes demineralized, and weaker, and casts a less dense

thing over 11½ milligrams is very suggestive. The average in the sixteen cases in the Massachusetts General series was 13.9 milligrams. The only adequate remedy for hyperparathyroidism to date is the surgical removal, either complete or subtotal, of the adenomatous or hyperplastic gland tissue. X-ray treatment has been tried without success. Surgical resection results in checking the hypersecretion back to a normal amount, which in turn brings the calcium and phosphorus in the blood back to normal and decreases the excretion of calcium and phosphorus in the urine down to normal, thus relieving



FIG 1

FIG 1 X-ray picture (from Albright, Baird, Cope and Bloomberg¹) showing generalized calcium deposits or micro lithiasis in the collecting tubules of both kidneys of a patient with hyperparathyroidism.

x-ray shadow. As a result of this condition there occur fractures following minimal trauma, cysts in the bone, epulis of the jaw, and other manifestations which cannot be described here. The subjective symptoms of hyperparathyroidism are not always very marked, and are apt to be dependent on the decalcification of the skeleton, often taking the form of generalized aches and pains in the bones and joints, weakness of the legs, and naturally loss of weight. Some cases are always thirsty and drink and urinate a lot, and have even been diagnosed as diabetes insipidus. The diagnosis rests fundamentally on the finding of a high blood serum calcium. The normal value for this is about 10 milligrams per 100 cubic centimeters of blood, and any-

the urinary stream of the burden, which often proves too heavy for it, that of carrying so abnormally large and heavy a load of calcium and phosphorus that some of it is apt to fall off and be dumped somewhere along the line of the urinary passages. The operations for the removal of these parathyroid tumors are often most tedious and trying. In a difficult case the whole posterior aspect of the thyroid gland, the neck and sometimes even the mediastinum must be carefully and bloodlessly dissected and methodically explored for a tumor whose size and location the operator cannot know beforehand. Occasionally the tumor may be the size of a small hen's egg, but more often it is very much smaller, and sometimes it is so small that it can be pos-

DENERVATION AND DISPLACEMENT OF THE URETER
FOR EXAGGERATED RENAL COLIC*

With A Report of a New Case

BY THOMAS N. HEPBURN, M.D.†

An intractable renal colic is occasionally encountered especially in the female which cannot be explained on any other hypothesis than a spasm of the circular muscles of the ureter pelvis or calyces but chiefly of the ureter.

Little has been known of the nerve supply of the kidney and ureter. In blind despair, various clinicians have tried relieving these patients by denervation operations. Professor Papin of France reported his operation for nephralgia by severing the sensory nerves running on the surface of the renal artery to the kidney.

Wharton reported two cases in 1930, in which through a suprapubic abdominal incision, he denervated the ureter beginning 6 cm. from the bladder and going to opposite the fourth lumbar vertebra. He dropped the ureter back into its bed.

That same year I reported my operation with two cases in which I denervated the whole ureter through a retroperitoneal approach and displaced the ureter laterally, at least two inches from its old bed, in an effort to retard the possible regeneration of this nervous mechanism. No one of these clinicians was aware of the others' work.

Since the report of these cases, Wharton by an elaborate research dissection with the cooperation and assistance of Streeter found

- 1 That the ureter received a nerve supply which is different from the innervation of the kidney and bladder
- 2 That nerves go directly to the ureter from
 - (a) The lowest renal ganglion at the upper end of the spermatic plexus
 - (b) The abdominal sympathetics, aortic, hypogastric and pelvic plexuses
- 3 That there is a connection between the ureteral innervation and plexuses that supply the ovary and testis

Andler had previously in 1925 experimented on animals showing that denervation of the ureter did not disturb its functional peristalsis and that no atony, hydro-ureter or stricture resulted.

Fromolt in 1928 by animal experimentation showed that the ureter could be liberated from the kidney pelvis to the bladder without im-

pairing its nutrition because its blood supply came from the renal, vesical and uterine arteries which had a sufficiently rich anastomosis within the ureteral walls to keep it satisfactorily nourished.

Lee in 1930 experimenting with cats showed that the cervical sympathetic nerves could regenerate in thirty-five days after gaps of one inch had been resected.

None of this animal experimental work had been reported when the first denervations of the human ureter were done.

Papin's operation of cutting the sensory fibers to the kidney is based on the presumption that there is no remediable cause for the pain, and the best we can hope to do is to relieve our patients from its sensory effects. Wharton's and my operation are based on the theory that the nephralgia is due to spastic obstruction of the ureter and that if we can relieve the kidney of the back pressure resulting from this spastic obstruction there will be no pain. Our operations have one great advantage over Papin's, in that the pathological process, so far as the kidney is concerned, is relieved.

Papin's operation does not stop the spasm, but only the renal pain resulting from the spasm. Ureteral denervation stops spasm, but renal pain will still result from any other type of ureteral obstruction.

If one should apply the conclusions from working on the sympathetic cervical nerves of the cat to the human beings, that they can regenerate in thirty-five days and bridge defects in continuity of an inch, the regeneration of the nerves of the denervated ureter should be completed in a few months' time, and the spastic disability re-established. There has been no recurrence of pain in Wharton's cases. So possibly this regeneration is not effected in human beings, again proving that animal experimental findings should not be blindly applied to them.

Without having any experimental work upon which to base this conclusion, I added the displacement factor to my denervation operation. One case has gone eight years and another one year without any return of spasm. The displacement factor has a mechanical advantage in that it takes up any redundancy which may have developed as a result of the obstructive and inflammatory processes, thereby improving the drainage of the kidney pelvis and facilitating recovery from pyelitis.

I freely admit I am not at the root of the

Read at the meeting of the New England Branch of the American Urological Association February 15, 1934.

*Hepburn, Thomas N.—Urologist, Hartford Hospital. For record and address of author see "This Week's Issue" page 129.

PYELO-URETERITIS CYSTICA*

BY WALTER D BIEBERBACH, M.D.†

I WISH to report the following case of pyelo-ureteritis cystica.

The patient was a forty-two year old married housewife, born in Poland. She had two admissions to the hospital, the first in November, 1931, at which time she complained of pain in the left kidney region. Three days later she had an attack of hematuria. The severe pain subsided with the appearance of blood in the urine and became duller in character accompanied by headache. Gradually the pain and bleeding subsided and the patient was free from symptoms for two or three months. Later they have recurred more frequently and the severity of the attacks and hemorrhage have increased. Her physical examination was negative except for slight tenderness on deep palpation at the left costovertebral angle, no mass could be felt.

Following are the cystoscopy and x ray report at the time of the first admission. "Kidneys outlined, normal in size and position. Catheters reach level of third transverse process. No calculi were seen. Bilateral ureteropyelograms show very small calices on the right with no filling defects. The ureter is dilated to a maximum width of 1 cm above the sacro-iliac level. The lower portion is not well shown. On the left side the pelvis and calices were within normal limits. The ureter shows an apparent right angle kink with a hiatus amounting to nearly 1 cm just above the third transverse process. There is very little dilatation. The ureter below the sacro-iliac level is not well shown. This examination suggests partial obstruction of the ureters on both sides, that on the right near the sacro-iliac level and on the left in the region of the kink. The cause is not apparent and nonopaque calculi must be considered. The general cystoscopic findings in the bladder were relatively negative except for some congestion of the bladder mucosa. No apparent obstruction was felt to No. 7 x ray catheters as they were passed to the pelves of the kidneys. Bladder specimen of urine showed a slight trace of albumin, no sugar, rare rbc, frequent wbc, squamous epithelial cells and bacteria. A culture showed nonpathogenic Gram negative bacilli. The right kidney sediment contained rare rbc with occasional wbc. Culture showed nonpathogenic Gram negative bacilli. A dye injected intravenously appeared on both sides in twenty minutes. Blood chemistry gave sugar 120 mgs per 100 cc, non protein nitrogen 30.0 mgs per 100 cc.

The patient was discharged with a diagnosis of partial obstruction of left ureter due to kink, with a question of calculi.

On January 31, 1933 the patient was readmitted to the Urological Service for study. Her symptoms were essentially as on her first admission but increased in severity. She stated that following her last cystoscopy she was free from symptoms for two months.

She was cystoscoped with the following findings: "No residual urine. Bladder capacity 300 cc." Plain and injected pictures were made, 12.5 per cent sodium iodide being used for the injection. The x ray report was as follows: Examination practically identical with that made in November, 1931 both ureters being dilated above the sacro-iliac level. The left ureter showed numerous small vacuoles that probably represent bubbles. No calculi are

shown in the tract. Because of the alleged bubbles intravenous pyelograms were made and these also showed two vacuoles at the level of the third lumbar transverse process. Diagnosis: Papillomatous or similar growth.

On February fourteenth it was decided that an exploratory operation was indicated under ether anesthesia. The kidney and ureter were removed. The specimen showed numerous mucosal cysts, 2 to 3 mm in diameter, in the kidney pelvis and ureter. Pathological diagnosis: Pyelo-ureteritis cystica.

In January 1934, one year after operation, the patient was checked up by cystoscopy and the report is as follows:

Urethra and external genitals normal. Bladder contains no residual urine. Capacity 300 cc. Studied throughout the bladder mucosa were many groups of small cysts, each group containing from four to five small transparent cysts about the size and shape of a split taploca. Around the base of each cyst was a small, bright red inflammatory ring which contacted with the bladder mucosa. In between the cysts was normal clear bladder mucosa. This type of cyst involved the entire bladder except the trigone. The trigone was thickened with bulbous edema. The upper and lateral surfaces of the internal sphincter were somewhat irregular and hanging from the left upper lateral margin was a small pear shaped cyst which was transparent. The right ureteral orifice is in normal position, imbedded in thickened mucosa. It was easily catheterized with a No. 7 x ray catheter and drained clear yellow urine freely.

The pelvis was injected with 10 cc 12½ per cent sodium iodide and ureteropyelograms were taken. The ureter was slightly dilated, also the renal pelvis. However these were not enlarged over the last x ray pictures. No vacuoles or air pockets were observed in the ureter. The ten minute emptying time showed no residual. Intravenous indigo-carmin appeared in good concentration in two and a half minutes. A collected specimen of urine from the bladder showed a slight trace of albumin, no sugar. Reaction acid. Sediment showed a few white blood cells and rare red blood cells. Culture no growth.

Specimen from the kidney showed slight trace of albumin, no sugar, acid in reaction. Sediment showed many white blood cells and rare red blood cells. Culture no growth. Guinea pig inoculated for TB was negative. Blood chemistry, non protein nitrogen 27.3 mgs. Blood smears all within normal limits.

There was no precedent in the literature advising operation in a case such as this. The patient's symptoms persisted unabated after the first cystoscopy. It seemed, therefore, that operative treatment was the only method of procedure. At the time of operation the exact diagnosis was not known, but in the presence of multiple tumors in the ureter it seemed advisable to remove the ureter and kidney. We recognize the possibility of the occurrence of the same condition on the other side. The patient to date, one year after her operation, is free from symptoms, and no increased pathology has invaded her remaining right kidney or ureter.

The above is an abstract from an article which will appear in *The American Journal of Roentgenology* in the near future with illustrations.

*From the City Hospital, Worcester.
Read at the meeting of the New England Branch of the American Urological Association, February 15, 1934.

†Bieberbach, Walter D.—Urologist, Worcester City Hospital.
For record and address of author see This Week's Issue, page 1297.

Operation—April 21, 1933 A left lumbar incision was made over the left kidney which was decapsulated and slung up in high position. From this incision the ureter was denervated down as far as a hand could safely reach.

A left McBurney incision was then made and the ureter exposed and denervated from the pelvic brim

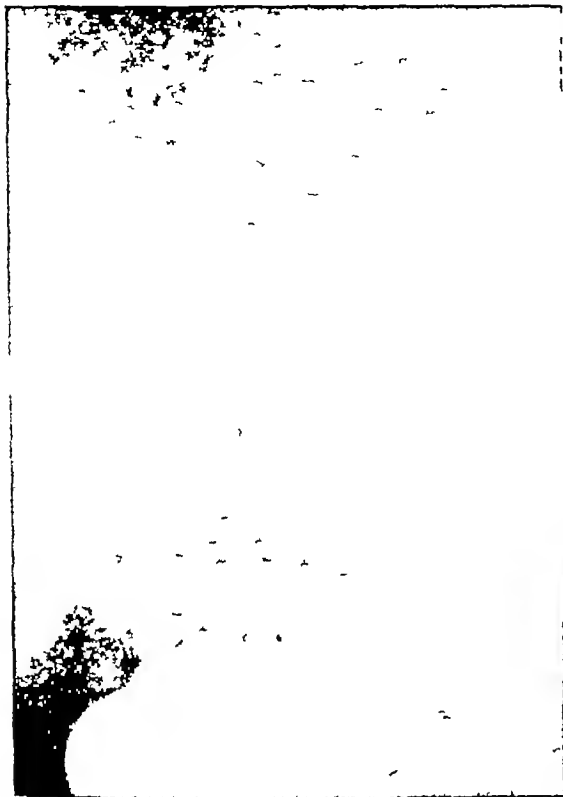


FIG. 3. Nine months after denervation and displacement of the ureter.

down to within 9 cm. of the bladder and sutured well out on the lateral wall.

The lower end of the ureter was denervated through a midline suprapubic incision and retroperitoneal approach.

It is now nine months since her operation. She has had no renal colic. Cystoscopy now shows no pus from the catheterized urine and the bladder has cleared up.

Unfortunately, this patient got a periureteral infection which made her convalescence very annoying, several residual abscesses having to be drained. At one time the external pressure on the ureter of one of these abscesses caused enough obstruction so that this woman had distinct renal pain. This pain was relieved on drainage of the abscess. The conclusion to draw from this observation is that the denervation of the ureter relieves renal colic only by making ureteral spasm impossible and that any other pathology causing ureteral obstruction may produce renal colic.

CONCLUSIONS

1. Intractable renal colic in cases where no obstructive cause can be found may be due to spastic obstruction of the ureter. Denervation and lateral displacement of the ureter is a logical surgical procedure in such a condition. Another clinical case is presented to support this contention.

2. The claim is made that denervation is more completely done from the retroperitoneal approach, and that the added factor of lateral displacement makes less probable the regeneration of the spastic nervous mechanism and relieves any redundancy which may have developed in the ureter, thereby improving drainage of the renal pelvis and relief from pyelitis.

3. While it is recognized that spastic ureteral obstruction is doubtlessly a very common cause of renal colic in both sexes, the extreme spasms that require denervation are quite rare, and in all reported cases they have been found in women. Wharton's anatomical dissections revealing a connection between the sympathetic nerve supply of the ovary, testis and the ureter would seem to give a sound neurological mechanism to substantiate the hypothesis of a probable sexual foundation for these severe spasms. That they occur more frequently in women than men is because sexual emotional defeat occurs more often in women than in men.

RENAL SYMPATHECTOMY*

Report of Two Cases, Including One Fatality

BY ERIC STONE, M.D.†

I HAVE the temerity to report such a small series of cases because of the disastrous outcome of the second case. This has the dubious distinction of being the only recorded fatality for this operation as there was no mortality in

the group of thirty-four cases I was able to find in a review of the literature.

CASE I. E. P. female, aged 31 years. Record No. 2806. In June 1932 the patient passed a catheter into her uterine cavity to produce an abortion. In July she had a bilateral salpingo-oophorectomy and supravaginal hysterectomy performed. In September 1932 she began to have a series of attacks occurring about once in ten days, marked by acute left renal and ureteral pain sufficient to incapacitate her to the extent that she had to give up all employment. The attacks were all identical, simulating

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†Stone, Eric—Surgeon in Charge, Urological Service, Charles V. Chapin Hospital, Providence. For record and address of author see "This Week's Issue," page 1297.

pathological picture when I am denervating the ureter. The cause of the spasm should be sought and if possible cured without operation. I am theorizing knowingly when I picture this cause as an emotional storm which lets loose a flood of nerve impulses too great to be carried by the ordinary conduits to the region from which the storm gathered, but must overflow to adjacent territory and involve neighboring structures. The sympathetic connection Wharton found between the ovary and testis and the ureter seems to me suggestive of a basis in some sexual emotional defeat. Its dominant finding in women I explain by the greater occurrence of sexual emotional defeat in women than in men. Dr Hunner's experience when he thought he was finding so many strictures in women, supports this theory.

There is no reason why emotional overflows may not have other than a sexual basis and result in ureteral spasm. I have seen many of them but to a lesser degree of severity. Ureteral colic due to spasm is not uncommon after an exciting meeting at a board of directors, or following an emotional platform oration. These spasms pass off more easily.

In order to add to the clinical material on this subject, I present the following case.

Miss Ruth S. first consulted me eighteen years ago when she was nineteen years of age because of pain in her right kidney region. Her appendix had been removed at seventeen. Cystoscopy at that time revealed no demonstrable pathology, and I made a diagnosis of sexual neurosis with ureteral spasm.

Painful attacks continued over a period of years. This patient was studied in various clinics, and besides developing a severe urinary infection no demonstrable pathology could be demonstrated. Her menses were always normal and the vaginal examination was negative. Her disabilities from these right renal attacks were so terrific that finally her family physician and surgeon did a right nephrectomy in February, 1932, that is sixteen years after the onset of her symptoms.

This relieved the patient for a few months only. The attacks then began occurring in the left kidney. The patient still had a bad chronic cystitis and had developed a left pyelitis with four plus pus cells from the kidney pelvis.

Her attacks were as often as once in ten days and were so severe that three or four grains of morphine would not control them. Avertin given rectally over a period of three and four days would not break the attack. Once a doctor had an anesthesiologist stay with her for twenty-four hours trying to keep her under ether anesthesia, but as soon as she would get out of the anesthetic, the pain would recur.

I saw her in 1933 for the second time in seven years. When she came to my care at the Hartford Hospital she was running a temperature from 101 to 106°. Her bladder was violently inflamed. Catheterized urine from her left kidney showed four plus pus cells. The functional capacity to excrete indigo-carmin was good. The ureteropyelogram is shown here. (See fig 1.) There is certainly nothing in this picture to explain the terrific renal colics to which this woman was subject. A diagnosis of spastic ureteral obstruction was made and a denervation operation decided upon.

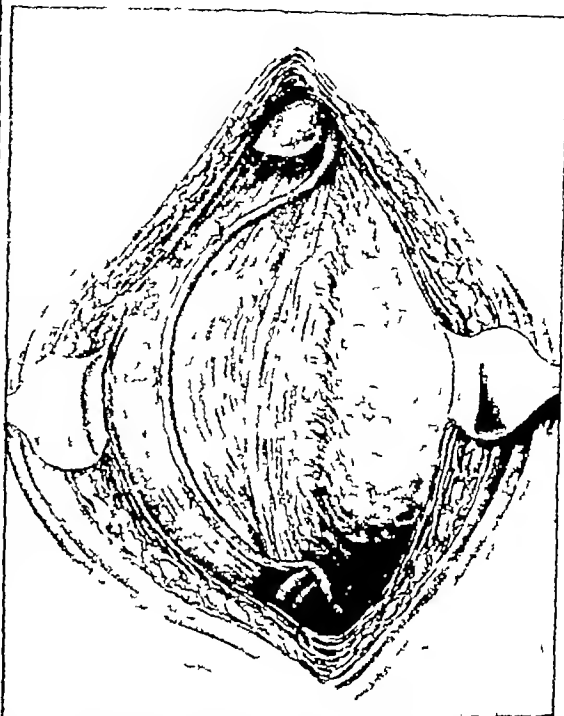


FIG 1. Drawing of displaced ureter after it had been removed from its original bed through a retroperitoneal approach.

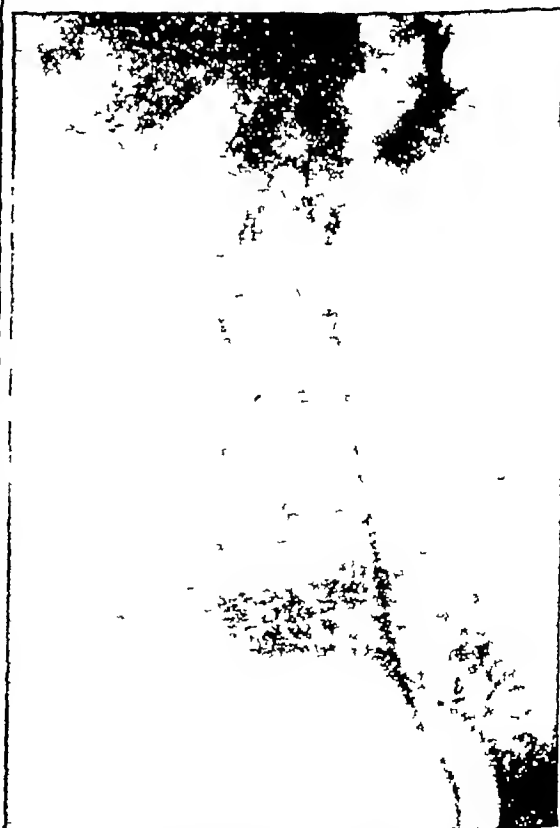


FIG 2. Before displacement and denervation of ureter.

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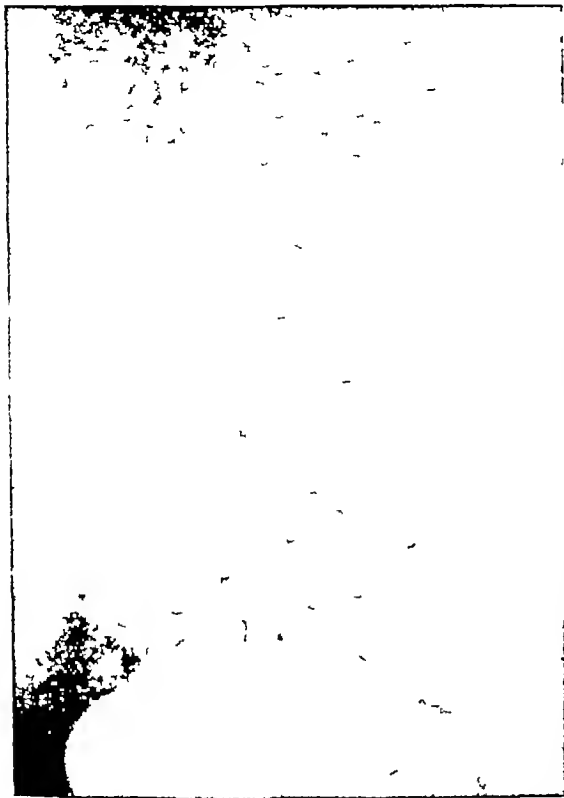


FIG. 2 Nine months after denervation and displacement of the ureter

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acute hydronephrosis except that at no time was the urine collected from the pelvis found to be under pressure. The attacks were so violent that various local physicians called in during attacks sent her to the hospital fourteen times in eleven months. Complete urological examinations were made on four of these admissions and no demonstrable urinary tract pathology could be discovered. The pyelograms shown in Plate I were made during an at-

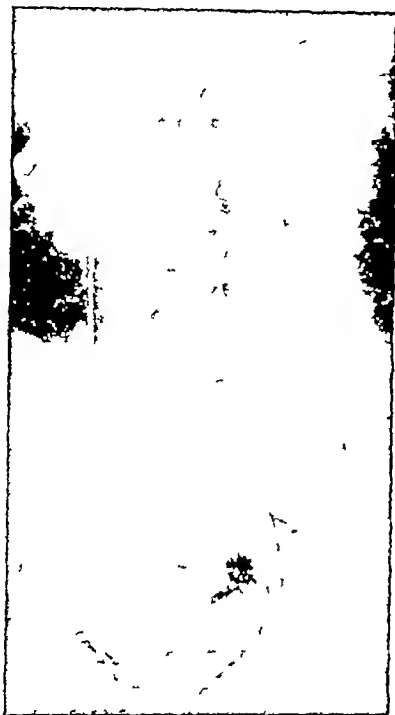


PLATE I Case I. Pyelogram showing normal calyces pelvis and ureter on the left the affected side; symptomless hydronephrosis on the right.

tack, on her sixth admission, and appear perfectly normal as do all other plates.

A knowledge of a bad psychoneurotic background and the emotional stimulus bringing on most of her attacks, lead to an investigation of her vegetative nervous system. More careful history taking revealed frequent attacks of urticaria, dyspnea, palpitation, recurrent intestinal colic and marked car sickness. An adrenalin test carried out on her last admission gave a marked sympathicotonic reaction (Chart I).

A composite of various physical examinations gives several significant findings, chiefly of a negative nature. During the attacks there was usually a tenderness over the left kidney region both anteriorly and posteriorly, but no muscle rigidity or inability to palpate the organ. The palpebral fissure was widened and the pupils dilated. Tachycardia was a constant finding. The gag reflex was increased and transitory areas of neurogenic hyperemia were usually present. The thyroid was not palpable nor could any abnormal impulse or bruit be made out in this region.

On August 8, 1933, under spinal anesthesia, the left kidney was exposed through an upper left rectus incision, the entire procedure being carried out extraperitoneally. The ureter was stripped of all its investments for a distance of 5 cm. The pedicle was freed and the vein and artery which bifurcated at the hilum only were easily stripped of all their coverings for a distance of 3 cm. The kidney was re-

placed in its bed and the wound closed around cigarette drain. The postoperative recovery was easy, being unaccompanied by any fever, nausea, or distention, and marked by less than the usual pain.

The patient was discharged on the sixteenth postoperative day. Two weeks later she resumed her work as a waitress and when last seen, January, 1934, had suffered no recurrence of the pain.

CASE II. M. I. O., female, aged 41 years. Record No. 2969. In May, 1931, the patient fell down a flight of stairs, suffering a mild concussion and multiple bruises. She was well until July 10, when she fell while standing on the floor, apparently having fainted. The next day she had a sudden attack of pain in the right kidney region lasting fifteen minutes and sufficiently severe to cause her to roll on the floor in agony. A second attack occurred two days later, and during the next three weeks, there was at least one attack a day, sometimes as many as four. Between the attacks she felt perfectly well. Once or twice after an attack, a few small red specks were noted in the urine and at various times, occult blood was found, but except for this and some frequency of micturition for a few hours after each attack, there were no urinary symptoms.

She was admitted to the hospital August 14, 1933. The next day a complete urological examination was done. A Fr. No. 18 stricture of the urethra was found and was readily dilated to Fr. No. 26. Both ureteric orifices were of golf-hole type and were fibrotic. The urines from both kidneys were sterile and the function of the kidneys normal. As was demonstrated by both retrograde and later by intravenous urography the kidneys and ureters were normal except possibly for a moderate hyperactivity of the right pelvis (Plates II and III).

In view of these negative findings and with the preceding case in mind her past history was reviewed for sympathicotonic symptoms. It was found that she had suffered from various gastro-intestinal disturbances for many years, with various diagnoses ranging from ulcer to chronic appendicitis. Indeed, in June 1932 her appendix had been removed and two weeks later a cholecystectomy was done. Pathologically, the appendix was normal, as was the gall bladder. These procedures gave her only slight relief. In youth, she had had recurrent long periods of bilateral neurogenic eczema, extremely resistant to local treatment, but at times disappearing spontaneously. Allergic vomiting had been present in childhood and infancy. Car sickness had always been marked. An adrenalin test gave a markedly sympathicotonic curve (Chart I).

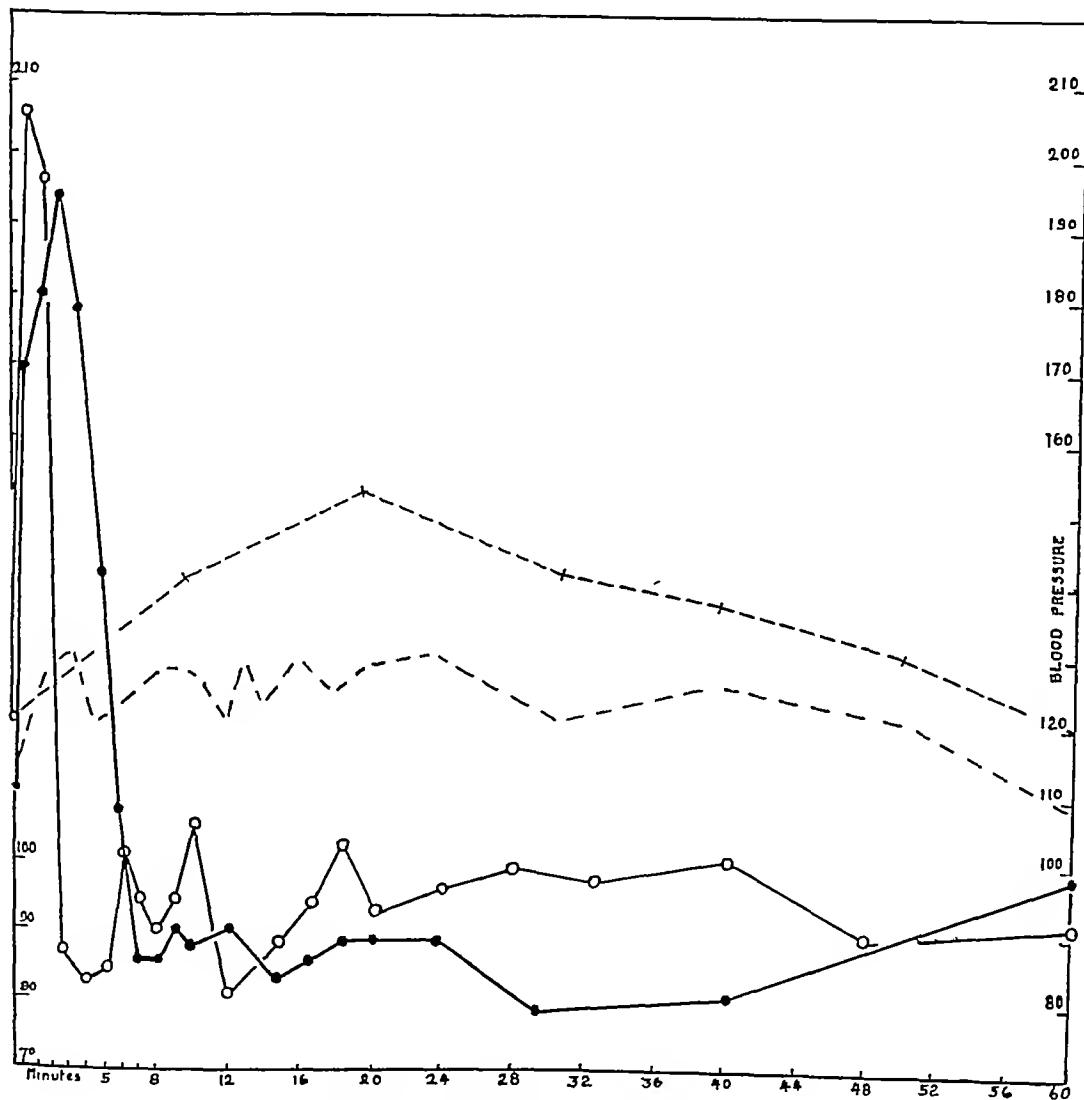
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During the month of October the attacks dropped from three or four in a day to an average of one in four days and those that occurred were much less severe. But during the latter part of the month she developed hyperesthesias and paresthesias particularly of the neck and arm and she was troubled with nausea and occasional vomiting. It was deemed wise to discontinue medication on which the attacks recurred in their original frequency and vigor. The day of her readmission she had three attacks, two occurring during the night in the hospital.

On December 2 at 8 A.M., a right renal sympathectomy was done under spinal anesthesia. A right lumbar oblique incision was made, exposing an apparently normal kidney and ureter. The ureter for 4 cm and the pedicle were divested of all their

fluid intake resulting in a normal urine output, freely voided made artificial administration of fluids unnecessary. During the first 48 hours the abdomen was soft and flat, flatus being expelled readily. During this period the pulse remained steadily between

CHART I



BLOOD PRESSURE READINGS AFTER INTRAVENOUS INJECTION OF 1 CC. OF 1-1,000 ADRENALIN

Case I. ○ — ○ — ○ Case II. ● — ● — ● Normal — + — + — + Vagotonic — — — — —

Investments a decapsulation was carried out and the organ was suspended according to Demings technique. The wound was closed in layers around a cigarette drain. The patient was returned to her bed in excellent condition. Except for a one-minute spell of retching a few minutes after administration, the anesthesia had been uneventful. The operation took fifty-five minutes to complete.

During her postoperative life there was at no time any nausea or vomiting. An excellent oral

100 and 110 respiration and temperature were normal although the temperature reached a peak of 101° the first day. It continued normal after the second day. There was so little discomfort that she received only one injection of morphine postoperatively that given on the day of the operation. Her condition was considered so fine that at the end of twenty-four hours she was removed from the recovery room.

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might be responsible for the symptoms, that they performed a ureteral sympathectomy or a renal sympathectomy. In other words they acknowledge, I think, that they interpreted their urological studies as showing nothing very definitely wrong with the kidney and yet they went ahead and did a renal or ureteral sympathectomy. How can one be sure? I am asking for information because I may have a similar case. How can one be sure that when he does a sympathectomy on the kidney or the ureter that it is really the cause of all the trouble that it may not be some other lesion or something in addition to that. In other words, what is the thing that crystallizes your judgment in doing such an operation?

C. L. DEMING, M.D. I am very much interested in renal sympathectomy. During the past year I have done two cases. Both of them were nurses about the age of 30. They both had been watched for some time and had been cystoscoped several times. Both had been thoroughly studied and we endeavored to formulate some idea as to what combination of symptoms and cystoscopic findings would indicate the procedure for a renal sympathectomy. We have two other cases on whom I think a sympathectomy is indicated. From the study of these four cases two of whom have been operated on with complete relief of symptoms, one for nearly a year, the other two and a half months (the latter is too short a period for a report of complete success) we endeavored to glean four or five factors which might lead us to the ideal sympathectomy case. The factors are these:

1. A long history of periodic attacks of pain which may be localized in the ureteral region referred toward the bladder. These attacks of pain are very difficult to relieve even after heavy doses of morphine. Ureteral catheterization did not seem to give relief but for a short period of time.

2. These cases all show a very painful ureteral catheterization. All of them will complain of severe pain as you pass a catheter up the ureter.

3. As one passes the catheter no matter whether it is No. 4, 5 or 6 the ureter always rolls with the catheter. It seems to be in a spastic condition. Even after these ureters have been dilated with large bougies and then a small No. 4 catheter is passed the ureter hugs it tightly and rolls with the catheter.

4. All of our cases showed normal urograms without any evidence of obstruction but there was a delayed emptying time a factor which I have not seen emphasized. Ten, twelve or fifteen minute emptying time films show a residue in the pelvis. We do not know what this means for we rarely see retained material within the pelvis and ureter unless there is an obstruction or ptosis.

E. L. PEARSON, M.D. I have been much interested in the treatment of nephralgia or kidney pain for which there is no obvious cause. In the last two and a half years I have done three operations for this condition with some satisfaction. The great majority of these cases are missed because we have no definite point on which to make the diagnosis. All the cases reported here to-night and the ones which I have seen have been previously seen by a number of physicians without anyone being able to find out what was the matter with them.

There is one point in the diagnosis which has not been brought up and which was quite definite in two of my cases. They had severe incapacitating pain apparently in the kidney which could not be relieved by morphine but which we were always able to relieve with physostigmine. Apparently the physostigmine restored normal peristalsis in the

ureter, facilitated emptying of the kidney pelvis and gave relief when morphine did not. I believe this is quite an important point in making a diagnosis.

It seems to me that the greatest difficulty is in actually carrying out the operation satisfactorily. You get in there and instead of finding one artery you find several and it is extremely difficult to strip off the nerves completely. In none of my cases has the denervation been complete. However, one case which I did two and a half years ago is still entirely well. She had been an invalid for over a year with severe renal colic but has now been working regularly for two years. She had some recurrence of pain at the end of nine months which disappeared spontaneously. The second patient had complete relief of pain for five and a half months but since then has had some pain about fifty per cent as severe as previously. The last case has been done only recently but has been relieved of all pain.

My thought is that we should have this condition more in mind as a possible diagnosis and not let these patients go on and on if there is a chance of relieving them by such a simple procedure. It would seem to me better to occasionally perform an unwarranted operation than to refuse such patients the possibility of relief merely because we lack adequate means of confirming the diagnosis.

I wonder in Dr. Hepburn's case if he did not do more or less of a renal sympathectomy when he freed up his kidney and ureter and stripped the capsule off the kidney. It seems that this might have played some part in the relief of pain in this case as it has been my impression that very inadequate sympathectomies may be sufficient to break the vicious circle which causes the pain.

E. L. HUNT, M.D. About the cause of death in Dr. Stones' case it is said that the adrenal can stand a good deal of abuse without causing death. I removed a kidney for chronic suppuration with stones in a young woman and had some difficulties in freeing it and when I brought it out there was a good sized tongue of the adrenal with it but she had absolutely a comfortable postoperative course and is well today. That is not quite analogous but it must have disturbed innervation and secretions and other functions which it had in it.

THOMAS N. HEPBURN, M.D. I quite agree with Dr. Barney that very possibly there may be (and I so stated) some other pathology underlying the situation which initiates these spasms. Those of you who have studied in detail the cases reported know that most of these people have had various abdominal explorations. Dr. Wharton has raised the question as to whether they may not be secondary to some pelvic pathology in women and he discussed that possibility in one of his reports. My own statement is that whatever the primary pathology may be by severing the sympathetic nerve connection to the ureter it could not cause spasm of the ureter.

In regard to Dr. Deming's criteria for denervation, I think these cases are very sensitive to cystoscopy. As a routine I anesthetize all my cystoscopic patients so that I am not able to corroborate his first sign of extreme tenderness. I think we find a great many patients who do not need sympathectomy whose ureter will grasp the catheter as you roll it. This observation alone certainly does not warrant denervation. I think his emptying time is very suggestive and more valuable. The real decision must be based on the frequency, severity and crippling character of the attacks.

As to Dr. Pearson's suggestion that my operation denervates the kidney I confess that I capsulated

morning of the second postoperative day her condition was as stated above. He was called in by a nurse fifteen minutes later. The patient was in a state of shock, simulating acute hemorrhage. She was pallid, cold and clammy. The pulse was weak and thready and its rate had increased to 130, the blood pressure was 90 systolic. Respirations were rapid and shallow, aided by the accessory muscles

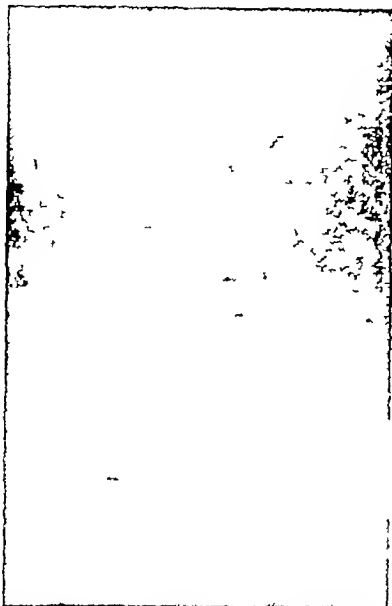


PLATE II Case II. Intravenous urography (16 minutes)



PLATE III Case II. Intravenous urograph (one hour) suggesting spasmodic constriction of the uretero-pelvic junction.

Perhaps the most marked feature was an immense distention of the abdomen, which fifteen minutes before had been soft and scaphoid, and peristaltic sounds had disappeared. Stipes, enemas, peristaltin and pituitrin had no effect on the distention. Caffeine and adrenalin produced no rise in blood pressure or improvement in the cardiac condition. Examination of the heart showed no enlargement and

only those murmurs which were present preoperatively. There was transitory improvement following intravenous administration of glucose. About 4 P.M. her temperature dropped to 96°, later there was a slight terminal rise. She had no pain whatsoever and the great abdominal distention apparently caused no distress. When seen at 6:15 p.m. she was conscious, rational and unapprehensive, although she was obviously in extremis, and complained only of feeling weak. She died at 6:30 P.M.

It is to be noted for what it may be worth, that during her fifty-eight hours of postoperative life, she had no recurrence of the right kidney pain.

An autopsy was performed three hours postmortem. No sign of hemorrhage, either in the operative field or intra-abdominally was found. The heart showed no thrombi, emboli or coronary occlusion, a mild chronic rheumatic endocarditis involving the mitral and aortic valves was present. The large bowel showed a patent constriction at the hepatic flexure, above and below which the gut was markedly dilated. The operative field showed a slight fibrinous exudate on the denuded kidney surface, although an encapsulated mass 10 cm. in diameter was found superior and slightly anterior to the upper pole. This was purplish in color, on opening the sac a hemorrhagic exudate escaped in which there were some clots. The mass was found to surround the adrenal gland. Both kidneys appeared grossly and microscopically normal. Microscopic preparations of the right adrenal showed no abnormality, other than an inflammatory reaction at its surface. The brain, and in particular, the region of the diencephalon appeared normal to inspection and on histological examination, except for some areas of vacuolization in the cerebrum. The ventricular and spinal fluids were normal. Sections of the cord showed only some accumulation of small round cells about the central canal.

The hemorrhagic reaction about the adrenal did not sufficiently disturb that gland to be interpreted as the cause of death. The collapse seemed too delayed to attribute to the spinal anesthesia, particularly as the intervening period had been free of any symptom referable to that procedure. The whole picture of the disaster was that of a sudden sympathetic paralysis, apparently involving its central control mechanism. The marked intestinal distention bespoke a sympathetic paralysis. The heart rate, which was never particularly high even at the crisis of the collapse, dropped to 70 as death approached, suggesting that the sympathetic accelerator influence was eliminated and the vagi were in control. This was borne out by the drop in blood pressure.

What the rôle of the reaction about the right adrenal gland may have been is difficult to determine. It is certainly theoretically possible that if it failed to produce adrenalin, such reduction may have so decreased sympathetic tone that the system went to pieces. This might account for the delay in the reaction. It is further suggested by the fact that whereas preoperatively, the intravenous injection of adrenalin had produced a terrific response after the supposed collapse of the sympathetic nervous system, similar injections failed to produce any appreciable effect, i.e., the response was that of a vagotonic, the sympathetic balance having been entirely eliminated. For these reasons it was considered that the patient died of sympathetic system paralysis.

DISCUSSION

J. D. BARVEY, M.D. I am very much interested in Dr. Hepburn's paper and in Dr. Stone's paper. It was not quite clear to me, however, how they were so thoroughly convinced that there was no other lesion in some other part of the body which

case was obtained from the surgeon who operated upon her

Upon arriving at the hospital she was examined. A catheter was passed and four ounces of boric acid solution put into the bladder. This returned and the diagnosis of rupture of bladder was questioned. The surgeon on duty was then sent for, and decided that she had a definite surgical belly and that there was an intra-abdominal hemorrhage and that immediate operation was indicated. A preoperative intravenous of saline solution was given. Spinal anesthesia was used and the abdomen opened. A large amount of free blood was found in the abdominal cavity and pelvis, and after palpation of the uterus and appendages which were apparently normal, the bladder was palpated and a rent in the fundus found which admitted four fingers. The blood was sponged out, the rent in bladder closed with suture and the abdominal incision closed. Just before the completion of the abdominal closure the patient expired on the table.

This case presents several points which I wish to make and which are the entire object of this short report. Dr. Arthur H. Crosbie in reporting a case of rupture of the urinary bladder (*Journal of Urology*, October, 1924), makes three definite points in the treatment of cases of rupture of the bladder. I wish to give those points here and to supplement them with further suggestions relative to these cases.

1 The importance of free suprapubic drainage in all cases, whether extra- or intraperitoneal rupture.

2 That there is no need of flushing out the abdominal cavity in cases of intraperitoneal rupture.

3 That it is not necessary to take time to sew up all the rents or tears in a bladder. Free drainage of the bladder using a one-half inch soft rubber tube. Nature will take care of the healing as the rents are bound to be fairly well approximated.

These general principles announced by Dr. Crosbie I wish to subscribe to and to add the following comments and suggestions regarding diagnosis and treatment.

1 That we may have a spontaneous rupture of the urinary bladder from overdistention which may occur along with some medical or surgical condition or as a postoperative condition.

2 That the urinary bladder may rupture extraperitoneally or intraperitoneally when overdistended, with no history of trauma but simply from overdistention with comparatively little voluntary muscular effort on the part of the patient.

3 In arriving at a diagnosis of rupture of the bladder it is important to have at least sixteen to twenty ounces or more fluid put into the bladder and see how much return we get from this larger amount. A smaller amount of fluid put into a bladder which has a rent in the

fundus is not sufficient to reach the fundus and the rent and the entire small amount may be returned through the catheter. If, however, we put in at least sixteen ounces, enough to well fill the bladder, we will get a definite indication from the amount of return.

4 These cases should have a transfusion at the beginning and during operation.

5 It is unwise to remove the blood from the pelvis and abdominal cavity. If the bladder is clean there is very little probability of infection and if the bladder is not clean, but is an infected bladder, we gain nothing by sponging out or flushing in a case of this type, as we will not lessen the infection which has already taken place.

6 Blood in the abdomen should be left in and not sacrificed as it means a great deal to the welfare of our patient. This is demonstrated very definitely in the profuse bleeding of extrauterine pregnancy or in surgery where we have a great amount of bleeding and in which we can squeeze the blood from the sponges and pads and leave it in the abdomen to act, as we might say, as a definite auto-transfusion. It is surprising how much benefit a patient gets from leaving this blood in and how different the convalescence is from those cases in which this large amount of blood is sponged out and sacrificed.

7 The choice of anesthetics in these cases is important. A general anesthetic or a local novocain block is far preferable in these cases with extreme hemorrhaging and very low blood pressure.

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DISCUSSION

C. L. DEMING, M.D. There is one other thing I think which may be done to make a diagnosis in ruptured bladder cases which is the injection of air followed by x-ray. Intraperitoneal rupture will show the air under the diaphragm while an extraperitoneal rupture will disclose the air in the tissues about the pelvis.

B. D. WETHERELL, M.D. Would not intravenous urography show a ruptured bladder? Last month I had the opportunity of seeing a girl of 35 who had a tuberculous bladder and I recovered the acid fast bacilli from the left kidney which was a large

the kidney with that in mind, hoping that I would get a "gun shot" surgical effect, but I certainly did not strip the nerves from the renal artery wall of the renal pedicle, as advocated by Papin. My conviction is that the nephralgia is due to ureteral obstruction. Remember that my kidney became painful when the ureter was obstructed by an extra-ureteral pressure after my denervation operation, thereby proving that the sensory nerves to the kidney were still functioning.

ERIC STONE, M.D. I would like to make one comment on the question of diagnosis. I was surprised in a review of the urological literature to find how little attention had been paid to the very easily obtained medical points that appear in a sympatheticotonic individual. Both the cases I reported were demonstrated to be not only sympatheticotonic as regards that kidney but the entire individual make-up was sympatheticotonic.

SPONTANEOUS INTRAPERITONEAL RUPTURE OF THE URINARY BLADDER*

Report of A Case

BY ARTHUR T. JONES, M.D.†

RUPTURE of the urinary bladder may be divided into two types, intraperitoneal and extraperitoneal. In reviewing the literature we find many cases of rupture of the bladder reported. These cases are due to various causes, such as trauma, especially in these days of frequent automobile accidents, also from instrumentation, from the presence of definite pathology in which the bladder wall is involved, or in which there is erosion into the bladder from inflammation and continuity of tissue, as in diverticulitis, tuberculosis, etc.

The reported cases, however, of spontaneous rupture of the bladder with no pathology, the condition being simply one of an overdistended bladder, are rather rare in the literature. In earlier days most of these cases were in men who had been drinking heavily and were unaware that they had an overdistended bladder but found they were unable to void, or they were brought into the hospital in a decided state of intoxication with symptoms of extravasation of urine. Cabot in his writings speaks of most of the cases being of this type. I think that we hardly realized in those days the actual condition which existed, namely, that it was a definite extraperitoneal rupture of the bladder with extravasation of urine into the surrounding tissues. We were inclined to look upon the extravasation as the real entity, treated that, as of course we should, obtained entrance to the bladder by sound and catheter and in due course of time most of these patients recovered.

Intraperitoneal rupture presents an entirely different picture, however, and the case that I wish to report presents definite symptoms and calls for a definite line of treatment quite different from the case of extraperitoneal rupture. Dr. B. H. Alton of Worcester reported before the New England Surgical Society at Portland, Maine, in 1931 a case of spontaneous intraperitoneal rupture of a tuberculous blad-

der. At that time in discussing his paper I took occasion to mention this case that I had seen and I find that my remarks are reported in the "Transactions of the New England Surgical Society for 1931" in the discussion of Dr. Alton's paper. I think, however, that I may report the case at this time and emphasize the points regarding diagnosis and treatment which I wish to make on this subject.

Patient F. G., aged 32, white, single, female, was seen by me in consultation December 15, 1930.

Previous History. Menstruated November 22nd, regular time. Has been flowing for five days, being ahead of time about ten days. She had been well until three weeks previous to my seeing her. She had been under treatment by her family doctor for a cough and pulmonary condition and ten days previous to my consultation had definite signs of a bronchopneumonia.

Present illness dates from five days ago, since which time the abdomen has been distended. There was a large mass in the lower abdomen, more prominent on the left side. The tumor was elastic and was regarded by her doctor as a possible ovarian cyst. To-day (December 15th), her condition has been improved until this evening when, in raising herself a bit to take her medicine from the nurse, she experienced severe pain and the sensation that something in the abdomen had burst. The patient's condition was extremely bad and it was evident that something unusual had occurred. Her doctor was immediately sent for. Consultation was asked and I saw the patient an hour or two after the occurrence of these symptoms.

Examination showed the patient in bed, a well nourished woman, who appeared to be extremely ill, eyes rather staring, anxious looking and breathing rapidly. The abdomen is distended and tense. There is some dullness over the pubes and about half way to the umbilicus. The large elastic tumor which was previously present had apparently disappeared. Pulse was 100, getting decidedly weaker, and in less than one-half hour was very weak and irregular. Further questioning of the experienced nurse on the case revealed that for the past several days when the patient coughed she could not hold her urine and that there had been more or less dribbling of urine for several days, also that she voided at frequent intervals but only a small amount. A catheter was passed and ten to twelve ounces of bright blood or bloody fluid was obtained. A diagnosis of spontaneous rupture of the bladder was made and the patient was sent to the hospital for immediate operation. The further history of the

*Read before the New England Branch of the American Urological Association, February 15, 1934.

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VERMONT STATE MEDICAL SOCIETY

THE DIAGNOSIS AND MANAGEMENT OF
OBSTRUCTIVE JAUNDICE*

BY HOWARD M. CLUTE, M.D.† AND NEIL W. SWINTON, M.D.†

THE successful management of obstructive jaundice is primarily related to the early diagnosis of an obstructive lesion in the larger biliary ducts. Here, as in many other surgical conditions, we are so dependent on the recognition of a partial or complete obstruction to the common duct by the physician first in charge of the patient that it is of definite importance to review briefly the significant data from which a diagnosis of such obstruction may be made in any patient. There is an unfortunate tendency among many lay-people and practitioners of medicine, as well, to consider jaundice which is not accompanied by alarming symptoms, as a more or less innocuous symptom for which no active investigation is indicated. The policy of postponing active investigation for weeks, or even months in jaundiced patients is directly responsible for the frequency of complications and fatal results in those jaundiced patients who must come to surgery. It is our belief that patients with jaundice should be considered as having an obstruction to their common duct, until other cause for the jaundice is found, that jaundice lasting more than a few days should be carefully investigated and its cause determined, and that jaundice proved to be obstructive in origin should, in general, be submitted to active surgical measures for its relief.

We wish to review at this time the diagnostic measures which are of value to us in active clinical work in the diagnosis of obstructive jaundice. First, it is well known that obstructive jaundice almost always arises from one of three conditions, stone in the larger bile ducts, strictures of the larger bile ducts or malignancies involving the bile ducts. With this situation in mind, therefore, one very commonly can determine from the clinical history alone whether a patient with common duct obstruction is suffering from stones, stricture or cancer.

The clinical history of common duct stones is well known. In the first place the history is that of a recurrent disease and not of a progressive process. Attacks of pain are the prominent features. In the typical case these attacks of terrific pain are followed by fleeting jaun-

dice. Secondary digestive disturbances consist mainly of distress and pressure in the epigastrium and most particularly of gaseous distention and eructation.

The typical history of stricture of the common duct differs materially from that of stones. Usually the patient has had a previous operation upon the biliary tract, commonly a cholecystectomy. If inquiry is made into the post-operative course it will be found that for the first few days after the operation all went well. Soon, however, marked bile drainage was noted from the drainage tract and this drainage of bile persisted for a matter of six to eight or more weeks. Gradually the external biliary drainage ceased and jaundice, either complete or partial and intermittent, was noted. Since the date of the operation, in many instances, jaundice has been complete and constant. In other cases in which the stricture is less complete attacks of fever, chills with transient jaundice and more or less epigastric distress and discomfort have been noted. In strictures of the common duct attacks of serious pain are rare in the clinical history.

In malignancy of the pancreas involving the common duct or one of the larger bile ducts, the typical clinical history is well known. Classically it is marked by the development of a painless jaundice accompanied by well-marked weight loss. Occasionally, however, malignancy of the pancreas with increasing jaundice may be accompanied by severe attacks of pain, since at times gall stones are present in the gall bladder to cause the pain in malignancy of the pancreas.

On clinical examination in obstructive jaundice there are relatively few findings which by themselves alone will determine the diagnosis. Thus, local tenderness and local spasm following attacks of upper right abdominal pain are significant of pathology in the biliary system. It has been our experience that local tenderness is commonly present after attacks of common duct colic if the gall bladder is present, but if common duct colic occurs after the gall bladder has been removed, such local symptoms are not prominent.

When the obstruction to the common duct is complete and lies below the junction of the cystic and common hepatic bile duct, as in cancer of the head of the pancreas, dilation of the biliary tree, including the gall bladder, is present. A dilated gall bladder has been palpable, however, in only 33 1/3 per cent of our recent cases of

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one, but she had no right kidney at all. She died about two months later.

RICHARD CHUTE, M.D. Would there be any objection to injecting sodium iodid in making the diagnosis or would that be too irritating?

A. T. JONES, M.D. It would seem to me that it would be. I should think that all that really would be necessary would be some plain solution, sterile water or saline or boric acid, and see if you get a return. The doctor on my left has suggested the injection of lipiodol. It would take a considerable amount of that and it would require x-ray plates, whereas we can come to the conclusion of ruptured bladder if we put in a small amount and get it all back. The error in these cases was in putting in a large amount.

In regard to the question Dr. Wetherell asked I can hardly comprehend how a skilgram would give a picture of the bladder sufficiently good to arrive at the conclusion of a rupture of the bladder.

C. J. E. KICKHAM, M.D. Very little has been said with regard to the use of cystoscopy in the diagnosis of rupture of the bladder. During the last several years at the Carney Hospital we have diagnosed three cases of ruptured bladder by means of cystoscopy. In each of these cases the rent was visualized. In one of these cases we just cystoscoped the patient in bed, without any upset on the part of the patient, and absolutely no trauma. I feel that the cystoscope is useful in the diagnosis of rupture of the bladder.

RIGHT RENAL CALCULUS ASSOCIATED WITH MULTIPLE BILIARY CALCULI*

BY CLINTON N. PETERS, M.D.†

MRS. H., aged 36 February 5, 1931

Complaint Pain in the upper right quadrant accompanied by nausea and vomiting.

X-ray shows shadow 3 mm. lying between eleventh rib and transverse process second lumbar vertebra.

Cystoscopic Examination on February 5

Plain Plate Catheters in position show shadow triangular in area one-half inch below end of right catheter. **Diagnosis** Right renal calculus.

Pyelogram shows normal left kidney. Right side pyelogram includes shadow in renal pelvis. **Diagnosis** Calculus right renal pelvis.

Physical Examination Essentially negative except some tenderness in upper right quadrant. This is more marked over the anterior surface than on the vertebral angle. Advise dye test for gall bladder.

Graham-Cole Test Kerasol by mouth shows malfunctioning gall bladder with shadow of calculus outside gall bladder which is faintly mottled. In travenous Graham-Cole test gall bladder is seen below twelfth rib. This is mottled with negative shadows consistent with biliary calculi. The positive shadow representing renal calculus is seen through the other shadows. One hour after fatty meal there is no change. **Diagnosis** Malfunctioning gall bladder with multiple calculi.

Hospital History March 9, 1931—Moderate sized gall bladder full of calculi removed. Convalescence uneventful. Left hospital March 26. On May 7, 1932, readmitted with same symptoms. On May 9, cystoscopic examination. X-ray plate showed renal calculus to be in relatively same position. May 11, through right oblique incision the right kidney pelvis was opened and calculus removed. Convalescence uneventful and patient left the hospital on June 3, 1932.

Follow-Up Patient seen on September 5 and December 20 in good health and without symptoms.

*Presented before the New England Branch of the American Urological Association February 15, 1934.

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A REPORT OF FOUR UNUSUAL CASES*

BY W. G. TOWNSEND, M.D.†

IN the first place, I feel that I owe you all an apology because there is nothing instructive or highly scientific in any of these pictures. To me they are just interesting but after all, if it were not for the interesting and bizarre cases, it would not be much of a life we lead.

The first picture is of a man of twenty-five with typical left renal colic. Intravenous urography after cystoscopic examination was unsatisfactory, showed a normal left kidney and a hypoplastic right kidney. To me the interesting thing was that his pain was on the left side and had nothing to do with the hypoplastic right kidney.

The next picture is of a woman of forty-three with staphylococcus aureus infection of her bladder. A routine check-up revealed congenital solitary right kidney. We could find no ureteral orifice and no dye came through, and again an intravenous urography showed nothing in her left side at all. She is well and healthy.

The third is a woman in her fifth pregnancy. She had right renal colic. She has a stone here and here. We got this plate, then she happened to sit up or turn around and the next plate shows the stone in the transverse position. The stone in the pelvis of the kidney turned on its long axis.

And, just to prove that all kidney stones in Vermont are not small, I have this one which weighed 398 grams.

Presented before the New England Branch of the American Urological Association February 15, 1934.

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X-ray evidence in common duct obstruction is usually of no practical value. Plain x-ray plates of the abdomen, however, which show gall stones are of course very significant in jaundice. We have avoided giving gall bladder dye to patients with jaundice because we feared the possible reactions that might ensue. We are familiar with the fact that certain men have employed this procedure yet we feel that in the presence of jaundice the information which gall bladder dye may give is not worth the added risk of its administration.

Duodenal drainage for diagnostic purposes has been perhaps the most satisfactory and dependable laboratory test for determining the cause of jaundice that we have used. Duodenal drainage can be used with relatively little disturbance in even the most seriously jaundiced patients. Duodenal drainage tells us first whether the common duct is patent, and whether bile is entering the duodenum. If the obstruction to the common duct is complete, occasionally the gastroenterologist will tell us that it is due to malignancy involving the ampulla as is shown by the recovery of blood and epithelial structures from the duodenum. If duodenal drainage returns bile from the duodenum we know, first, that the common duct is not completely obstructed and secondly, by the microscopic examination of the bile further important data are obtained. Thus the presence of calcium bilirubin crystals is diagnostic of calculus formation in the gall bladder or main bile ducts. The presence of pus and epithelial debris is significant of an infectious process. Failure to obtain gall bladder bile on stimulation indicates absence of gall bladder function. In thirty-one cases in whom duodenal drainage was carried out by Dr. Wilkinson, in the Gastroenterological Department in the Clinic, thirty correct diagnoses have been established at operation and one error has been noted. We recommend this procedure particularly for use in jaundiced patients and in those patients in whom the usual gastroenterological studies have been uncertain.

In the last two years we have used the galactose tolerance test to determine whether the jaundice was infectious or hemolytic or obstructive. At best it seems to us that this test is but confirmatory of other findings and by itself alone could not be depended upon to settle the diagnosis.

Assuming that, from the clinical history and examination and from the laboratory studies, obstructive jaundice is present, either from stones, stricture or cancer, surgical intervention is indicated save in those cases long neglected and obviously hopeless, who would certainly not withstand any operative procedure. The surgery of obstructive jaundice has always been considered extremely hazardous. These patients

do not stand operation well, because kidney damage is sometimes present, liver damage is constantly present, and because many of them have a tendency to bleed after operation. Only as we recognize these complicating factors, that may possibly arise in these patients, and as we take special precautions to prevent them, can we hope to operate successfully to remove the cause of the obstruction to the common duct. In estimating the operative risk in these patients we must consider in each one certain significant data. Thus studies of the non-protein nitrogen of the blood and of the phenolsulphonephthalein excretion in the urine give us an immediate index of the degree of kidney damage which has arisen from the concentration of the bile salt in the blood and in the urine and from the diminished fluid intake which is usually present.

The degree of liver damage cannot as yet be satisfactorily measured by any single test available for clinical use. In clinical practice liver damage however, is a very real condition though it may not be measured in actual figures. We may estimate the probable degree of liver damage by the history of the length of the jaundice. Obstructive jaundice going on for months invariably is associated with serious liver damage. A high secretion of urobilinogen in the urine is direct evidence of the inability of the liver to metabolize urobilin in the blood stream into bilirubin. A constantly high bilirubin is further evidence of probable liver damage.

The tendency to bleed in these patients cannot be accurately estimated by any laboratory test, which has, as yet, been devised. The bleeding time and the coagulation time are not reliable for this purpose. The clotting index is not practical. A rapid sedimentation rate in which the red cells in the blood settle more than thirty millimeters in thirty minutes has been said, by Linton and others, to indicate a probable tendency to bleed after operation. In our experience this test is by no means accurate, yet it is the only test with which we have had experience, which is highly suggestive and, therefore, of distinct clinical value in prognosticating the tendency of patients to bleed in obstructive jaundice.

It is fortunate that the three major complications, which may occur after operation in obstructive jaundice, can be largely controlled and prevented by the same therapeutic measure, namely, the administration of large amounts of fluid and of carbohydrate, particularly in the form of glucose. The high fluid intake dilutes the toxic material in the blood stream and increases kidney secretion thus, diminishing kidney damage. The high carbohydrate intake, which is given as glucose intravenously and subpectorally and as carbohydrate food by mouth is of great importance in restoring the glycogen reserve in the liver and so limiting liver destruc-

malignancy involving the biliary tract, since in many cases the malignant process obstructs the biliary tract proximal to the cystic duct or invades the cystic duct itself and so prevents dilatation of the gall bladder

Jaundice is, of course, the one outstanding clinical finding which at once points to a possible obstruction of the common duct. Because of this fact and because the changes in physiology, which accompany jaundice, may make these patients serious surgical problems, it is important that this clinical finding be considered with especial care

It has been taught that common duct stones were usually associated with jaundice either transient or constant in type. In a previous analysis of our¹ cases of common duct stones in seventy-two patients, it was found that thirty per cent of the patients had no jaundice at the time of their operation and had no history of jaundice in the past. Judd² has reported that twenty-five per cent of the common duct stones seen in the Mayo Clinic gave no history of jaundice in the past and had no jaundice at the time of operation. For the purposes of this particular study we have reviewed all the cases of biliary tract disease seen at the Lahey Clinic in 1931 and 1932. In these two years there were forty-six cases of common duct stones, of whom sixty-three per cent had a history of jaundice at the time of operation. Thirty-seven per cent, however, of these forty-six cases of proved common duct stones had no jaundice at the time of operation and had no history of jaundice in their previous illness. This demonstrates, we believe, once again very emphatically that the presence or absence of jaundice cannot be considered a positive criterion for the presence of common duct stones.

In strictures of the common duct, jaundice has been present either in the history or at the time of examination in every case that we have ever seen. In the six cases treated in the past two years all had jaundice at the time of their admission to the Clinic.

Jaundice is a common symptom in malignancy involving the common duct, but it is not necessarily an early symptom. Thus in one patient whom we had personally followed for some months with vague epigastric disturbances, jaundice was not present until eight days before operation. At operation, however, malignancy of the pancreas was found which by slowly increasing pressure upon the common duct had made the common duct dilate to nearly three-fourths of an inch in diameter. Only when the obstruction to the duct became complete, however, did jaundice actually appear in this case. In the cases of malignancy involving the bile ducts seen in the past two years, jaundice was present in fifty per cent and absent in fifty per cent.

The laboratory data, on which we must de-

pend for determining the actual presence of obstruction to the common duct as a cause of the jaundice, are largely designed to estimate the origin and degree of the jaundice. It has been our experience that the very simplest laboratory examinations of testing the urine for bile and observing the color of the stools not infrequently are quite sufficient to settle the diagnosis if they are repeatedly performed and correctly interpreted. In clinical practice bile in the urine and gray-colored stools mean obstruction of the common bile duct. We have occasionally been quite surprised to find showers of bile, so to speak, in the urine in patients who had attacks of excruciating upper abdominal pain with no visible jaundice. To observe this bile, however, the urine must be tested repeatedly during the hours and days following the attacks of pain. Furthermore, in these cases such a shower of bile in the urine is occasionally accompanied by a definitely clay-colored stool, which confirms the diagnosis. When bile is present in the urine and the stools are persistently brown in color, however, we know at once that if the jaundice is obstructive in type the obstruction is not complete and we recognize that of course the jaundice may be of infectious or hemolytic origin under these circumstances.

Studies of the urobilinogen in the urine are readily performed and give helpful information in two ways. First, the absence of urobilinogen from the urine means complete obstruction of the common bile duct. Secondly, large amounts of urobilinogen show well-marked liver damage. A normal urine urobilinogen shows the absence of complete common duct obstruction and the presence of good liver function.

Various methods of precision are at hand for the estimation from blood examination of the degree of retention of the bile pigments. Of these methods, we prefer in our clinical work to use the bilirubin test, which is a relatively simple test giving us the precise figure or the amount of bile pigment in the blood stream. One may consider that the normal individual will have from one tenth of a milligram per 100 cc of blood to five tenths. When the bilirubin is more than five tenths, jaundice is latent and when the bilirubin is one and over the jaundice is usually visible. Here again, repeated studies of the bilirubin are of greater value than single tests. After a serious attack of abdominal pain the bilirubin may be elevated for a day or so with no visible jaundice. In patients who have obvious jaundice, daily studies of the bilirubin determine whether the jaundice is stationary or increasing or decreasing in severity. Furthermore bilirubin estimations give us inferential evidence of the presence or absence of liver damage. Thus, we may infer that when the bilirubin is constantly elevated to a high figure over many days that liver damage is doubtless present.

sedimentation rate is followed very closely and when it is rising we are at once suspicious of the possibility of hemorrhage. Pink staining in the biliary drainage, slight oozing about the sutures in the skin of the wound, frank oozing along the drainage tract, oozing from the gums, blood in the urine or stools demand immediate and if need be repeated transfusions. Blood donors must be matched and grouped before operation and be readily available so that they may be used at once when the first signs of oozing occur. It is our custom to have several donors available for each patient with obstructive jaundice before operation is undertaken.

In patients having obstructive jaundice due to a benign lesion in whom complete recovery is possible, if hemorrhage does occur, there is almost no limit to the lengths which we must go to control bleeding. Thus in a recent serious case twelve blood transfusions were given of which eight were given within three days during the period of the most serious and extreme bleeding. Her recovery was complete and satisfactory. When hemorrhage occurs from obstructive jaundice due to a hopeless stricture within the liver substance not amenable to surgery, or to some hopeless malignancy such extreme measures as used in the case just mentioned, are not necessarily indicated.

Since we have adopted this method of management in obstructive jaundice, our results have been increasingly satisfactory. Reviewing the cases seen and cared for in 1931 and 1932 we find that there have been thirteen patients with definite and serious obstructive jaundice due to common duct stones. All of these were operated upon and four of these patients had bleeding postoperatively. No patients in the group died from hemorrhage. One of the thirteen patients died eight weeks after operation from multiple liver abscesses.

In the same interval there were six cases of stricture of the common duct. Five of these were sequels of previous operations upon the biliary tract done elsewhere and one resulted from an automobile accident which ruptured the common duct. Three of these patients died from hemorrhage and liver failure. Their strictures were within the liver substance and so could not be repaired surgically. All had been jaundiced for months or years before admission. Three of these stricture patients made recoveries, since their strictures were so situated that they could be repaired. One of these three had serious hemorrhages after operation but was carried through safely by repeated transfusions, six in number.

In 1931 and 1932 we operated upon fifteen patients with malignancy involving the biliary tract. Of these patients twelve recovered from the operation and left the hospital and three died from inanition. Three had definite bleeding postoperatively controlled by blood transfusions and none died of hemorrhage.

It is to be noted that in the thirty-four cases of obstructive jaundice operated in the Clinic in the last two years, hemorrhage has occurred ten times and was a fatal factor in three hopeless stricture cases. Fatal hemorrhage did not occur in any benign obstruction of the biliary system.

In summary. The successful management of obstructive jaundice depends upon

- 1 The early diagnosis of obstructive jaundice. We feel that jaundice in adults should be considered of the obstructive type until proved otherwise and any case presenting itself with jaundice should have the benefit of immediate study to differentiate it from the infectious and hemolytic forms.
- 2 There are in clinical practice only three main causes of obstructive jaundice. Common duct stones, strictures of the ducts, and malignancies involving the ducts.
- 3 The diagnosis of obstructive jaundice can commonly be made from the history, presence of bile in the urine and the finding of clay-colored stools.
- 4 Certain other laboratory data give us additional information concerning these cases. Absence of urobilin in the urine indicates complete obstruction of the ducts. Large amounts of urobilin indicate liver damage. Repeated bilirubin determinations indicate the course of the jaundice and some inference of the extent of liver damage. Duodenal drainage is one of our most accurate procedures in determining the presence of common duct obstruction and aids in the differential diagnosis of its cause.
- 5 The diagnosis of obstructive jaundice being established, the patient should be considered a surgical problem and immediate steps taken to prepare him for operation.
- 6 The adequate utilization of fluids, glucose, saline and whole blood transfusions will prepare these patients for operation. Operation should be undertaken when no further improvement in the patient is noted with the use of the above measures.
- 7 Following operation, of the three usual complications, bleeding is our most serious and feared complication. Bleeding following operation is best treated by whole blood transfusions.
- 8 In the past two years, in thirty-four cases of obstructive jaundice, bleeding occurred following operation ten times. Death occurred from hemorrhage in three hopeless stricture cases. No death from hemorrhage occurred in any benign obstructive lesion of the common duct.

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- 2 Judd E. S. and Burden V. G. Intrahepatic cholelithiasis. *Surg. Gynec. & Obst.* 42: 322 (March) 1946.

tion and helping regenerate liver lobules already seriously damaged by long obstruction. Not only should a diet high in carbohydrates be given these patients, but as has been recently shown by Mann, protein should be strictly omitted from their diet.

The administration of fluid, and particularly of glucose, is the best preventive measure at our command for diminishing the tendency to bleed after operation. It is the experience of Ravdin, Linton and others, as well as ours, that this measure alone is adequate to control the hemorrhagic tendency in most patients with obstructive jaundice. When, in spite of this measure, hemorrhage occurs it can, in most cases, be controlled by blood transfusions. The use of calcium chloride intravenously or calcium lactate by mouth, or both, in these patients has been an accepted clinical procedure for the prevention of postoperative bleeding. There are some who believe that calcium neither prevents hemorrhage nor stops it once it occurs, while others find it is of value. It is our present belief from our clinical experience that the routine use of calcium is not indicated. If, however, postoperative oozing occurs in spite of adequate fluid and glucose administration, and in spite of blood transfusions, we feel that calcium should be added at once to our methods of treatment since it is the only other known method which may result in checking postoperative bleeding.

It is desirable to relate the actual procedure that we undertake when a seriously jaundiced patient with common duct obstruction is admitted to the hospital. Our first object is to obtain blood for the estimation of the bilirubin, non-protein nitrogen and sedimentation rate and to begin at once the administration of fluid and glucose. Constant venoclysis has proved, in our experience, to be the most satisfactory method by which these objectives may be obtained. On admission then, a cannula is at once inserted in a vein, which has been opened and made ready under local anesthesia, and from this cannula sufficient blood is taken for the tests desired. Venoclysis with salt solution and glucose alternating with distilled water and glucose, so that too much chloride will not be administered, is at once established. By this method three to five thousand cubic centimeters of fluid and one hundred to two hundred grams of glucose or more can be given in each twenty-four hours. The patient is not disturbed. Venoclysis once established in a vein may go without further manipulation for five to eight days. During this same period the patient is given fluids freely by mouth as he may take them and carbohydrate diet, consisting of oatmeal with sugar and cream, milk, custard, fruit juices and ginger ale, et cetera.

In order that we may follow the course of the patient, as shown by the laboratory examinations, and in order that we may note the fluid

intake and output very clearly, we have devised a jaundice chart, which has been of definite clinical value in these patients.

The decision as to when operation should be undertaken and how long the preoperative treatment, with fluids and glucose, should continue is frequently difficult. In seriously jaundiced patients five days of fluid and glucose before operation is usually the least time that should be consumed. In certain cases, who are stuporous or delirious and in whom evidences of kidney failure are marked, seven and eight days may be necessary. In other patients, however, in whom it is obvious that complete obstruction to the common duct is present, and in whom the general condition is satisfactory, operation may be done on the fifth or sixth day of treatment. In general, when doubt exists as to the patient's ability to withstand surgery, venoclysis should be continued for a longer time and preparation should be continued up to eight, ten or even twelve days before operation.

The management of these patients at the time of operation is a technical problem on which we wish to make but one or two general remarks. The first consideration in the operation is the return of the bile stream to the intestinal canal. Occasionally external biliary drainage without returning bile to the intestine is the only procedure possible but whenever it is possible the return of the bile to the intestine is most essential. The presence of the bile in the intestinal canal has a most beneficial effect in obstructive jaundice. The second consideration in the surgery of obstructive jaundice is the permanent relief of the obstruction by the removal of the obstructing stone, the repair of the stricture, or the short-circuiting of the bile tract around the obstructing cancer. Occasionally it is necessary to carry out these procedures in a short time with as little intra abdominal manipulation as possible and with as little hemorrhage and shock as possible. The anesthesia, as is generally known, should bring no added burden to liver and kidney, thus, ethylene oxygen administered by intratracheal catheter and local anesthesia in the operative field are the ideal procedures. Spinal anesthesia, save in the exceptionally good risk, may be distinctly dangerous in serious obstructive jaundice.

Following operation the first seven days are the days in which the major complications most commonly occur. Hemorrhage is the particular danger which must be watched for and controlled. In patients well prepared before operation, postoperative kidney failure and liver failure have not been serious factors in our recent experience. The prevention of postoperative hemorrhage should start with blood transfusion in the seriously jaundiced patient at the time of operation. Glucose and salt solution are constantly administered by venoclysis for the first five to seven days after operation. The

been on a diet of cow's milk and which, when first seen, had a hemoglobin percentage of 23 and erythrocyte count of 2,220,000. After regulation of the diet, a small blood transfusion and administration of copper and iron, the general condition rapidly improved and the blood count returned to normal.

Following Dr Johnson was Dr T E Hays, Instructor in Physiotherapy, who discussed the prevention and correction of deformities of arthritis. Dr Hays illustrated, with x-ray films and with patients the more usual types of deformities that commonly result from atrophic and hypertrophic arthritis and the means employed to avoid them as the disease advances or to correct them after they have developed. He particularly warned against the flexion deformity of the dorsal spine which cramps the chest and causes serious interference with the proper function of the heart, lungs and abdominal organs. Dr Hays demonstrated several devices which are of value in preventing or treating deformities, and discussed the use of such measures as heat, massage, rest and exercise.

Dr W G Townsend, Professor of Urology, next spoke on "Transurethral Prostatic Resection," briefly describing the operation, the indications for its use and the results to be expected following it. He stated that this type of operation was of great value in patients who have obstruction resulting from median bar or unilateral enlargement of a lateral lobe in patients whose general condition prohibited the more serious complete prostatectomy, or to secure better drainage in patients with carcinoma of the prostate. Dr Townsend's discussion was illustrated with lantern slides and a demonstration of the instruments used.

'Flat Feet' was the topic discussed by Dr R. L. Maynard of the Department of Orthopedic Surgery. Dr Maynard first described the anatomy of the foot and ankle, with special reference to the structure of the arches and the line of weight bearing. He next explained the anatomical and physiological changes resulting from faulty weight bearing strain, arthritis and paralysis with the symptoms and signs of each. The differences between metatarsal and longitudinal arch weakness were discussed together with the alterations in line of weight bearing which are brought about by each. In describing various modes of treatment, Dr Maynard explained the proper ways of applying adhesive straps, and of making plaster impressions of the feet, from which metal plates may be made and discussed the features which good fitting shoes should have to aid in correction of the deformity. In closing Dr Maynard demonstrated how a foot should be strapped with adhesive plaster.

At this time the assembly divided into various groups which attended the following demonstrations:

'Preparation of Formulae for Infant Feeding' under the direction of Dr C K. Johnson.

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The Stethophone, by Dr H. E. Upton.

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"Plaster Casts of the Feet," by Dr R. L. Maynard.

Opportunity was afforded for general discussion of problems relating to the subjects under consideration. The meeting adjourned for luncheon at 1 P M.

The Friday afternoon session opened at two o'clock with a discussion by Drs P E McSweeney and E D McSweeney, of the Gynecology Department, of the commoner tumors of the female generative tract, and the properties and modes of application of radium. Dr P E McSweeney demonstrated gross pathological specimens of tumors, and explained briefly the symptomatology and treatment for each. He also exhibited a patient with a complete inversion of the uterus headed by a large submucous fibromyoma attached to the fundus, and described the technic of the operation which was proposed to correct this condition. Dr E D McSweeney gave a short résumé of the discovery and characteristic features of radium. He demonstrated radium needles and the different types of applicators which may be used. He also discussed the types of conditions which were particularly suited to radium therapy, the methods of application and the dosage employed.

The Department of Ophthalmology, as represented by Drs K C McMahon and A. L. Larner, next conducted a clinical demonstration on the non-surgical treatment of strabismus. Dr McMahon, after explaining the necessity for early correction of squint, outlined the steps for adequate treatment which include visual training of the affected eye, proper refraction, using drops, fusion training, and general constitutional measures for building up the child's health. Dr Larner explained the optical principles involved in the development and subsequent correction of strabismus, illustrating his remarks with blackboard drawings. Drs McMahon and Larner closed by showing about a dozen children who were receiving non-surgical treatment for strabismus.

The Department of Surgery was represented by three speakers: Dr G M Sabin, Dr W T Rees and Dr B D Adams.

Skeletal Traction was the subject of Dr Sabin's discussion. A fracture-bed, upon which a skeleton was placed, was wheeled into the amphitheatre and the various appliances used to give skeletal traction were exhibited before the gathering. The Kirschner wire and apparatus were used in demonstrating the reduction of certain fractures of the femora and tibiae. Following this, x-ray films of several fracture cases were shown to illustrate the value of skeletal traction, especially in badly comminuted fractures of the tibia and femur.

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MISCELLANY

THE CLINICAL MEETING OF THE VERMONT STATE MEDICAL SOCIETY

MARY FLETCHER HOSPITAL, BURLINGTON
MAY 4 AND 5, 1934

For some years the officers of the Society have considered the wisdom of holding a mid-year meeting of the Society, conducted along entirely different lines from those of the regular State Meeting, i.e., clinical demonstrations instead of the reading of papers, and for the first time in the history of the Vermont State Society a clinical meeting was held in Burlington on May 4 and 5. It was an experiment and there was much speculation beforehand as to the response regarding the attendance in numbers and also regarding the reception of the program. The registration of 146 men was larger than the average registration at the Annual State Meeting and the demonstrations were received with pronounced expressions of approval or almost enthusiasm, and the writer believes that the holding of such meetings by State Societies is a most valuable function of the organization, in the smaller States to be held in connection with the leading clinical center, and in the larger States perhaps being held as sectional meetings. The program is a bit too ambitious for a County Society unless it is quite large.

There is no doubt but that this mid-year Clinical Meeting will be adopted as a permanent part of the activities of the Vermont Society.

The exercises as outlined in the program are detailed below.

At the meeting of the Vermont State Medical Society, held in Barre last October, it was voted to hold a mid-winter meeting in Burlington with the cooperation of the College of Medicine of the University of Vermont. However, as it later seemed that many physicians in the state would be hindered by weather conditions, from attending a two-day session in February, the Executive Committee of the State Society decided to postpone it until early May.

On Friday, May 4, and Saturday, May 5, a clinical meeting of the Vermont State Medical Society was held at the Mary Fletcher Hospital, Burlington, Vermont. The program was conducted by the faculty of the University of Vermont College of Medicine, with C. H. Beecher, M.D., Professor of Medicine acting as presiding officer. The other members of the committee in charge were Dr. E. H. Butties and Dr. Lyman Allen and, ex officio, Dr. T. S. Brown, Superintendent of the Mary Fletcher Hospital, and Dr. J. N. Jenne, Dean of the College of Medicine. One hundred and forty-six physicians attended the sessions.

The program consisted entirely of clinical demonstrations and discussions, no formal papers were presented. Most of the sessions were held in the surgical amphitheatre of the hospital, group discus-

sions of various subjects were held in various other parts of the hospital and a few reels of medical motion pictures were shown in the auditorium of the Fleming Museum. Through the courtesy of the Mary Fletcher Hospital, visiting physicians were tendered a complimentary luncheon on Friday noon, in the main dining room of the hospital. On Friday evening an informal dinner was served in the ball room of the Ethan Allen Club, after which the guests enjoyed the privileges of the club. Music was furnished during the dinner by the University of Vermont male quartet.

At the close of the meeting Dr. J. H. Woodruff, of Barre, President of the Vermont State Medical Society, extended the thanks of the Society to the committee, the officers of the Mary Fletcher Hospital and the Medical College. Dean Jenne announced that the College of Medicine would sponsor a similar clinical meeting next year.

In the exhibit hall were several interesting displays of x-ray films and photographs of the cases discussed at the meeting, as well as films and gross specimens of various types of heart lesions. These were prepared and presented by the Department of Pathology. The Department of Anatomy exhibited a number of dried skulls and serial sections of the head to demonstrate the anatomy of the mastoid cells and their relation to the adjacent structures.

Dr. C. A. Newhall of the Dermatology Department, opened the program on Friday morning by presenting four cases, one of eczema, another of psoriasis, a third of scabies, and a fourth of alopecia areata. He outlined the diagnostic features of each case and gave indications and suggestions for treatment. In his discussion of eczema Dr. Newhall demonstrated, by the use of diagrams, the stages through which the disease may pass. He also recommended the use of the so-called "patch test" in cases where external irritants are thought to be etiological factors. At the close of his discussion, printed copies of several standard formulae of ointments for application in eczema, psoriasis and scabies were given to the guest physicians.

The next feature on the program was conducted by Dr. C. K. Johnson, Professor of Pediatrics, who presented several feeding cases. The first infant shown was one which was just recovering from a well-developed rickets, as indicated by frontal bosses, moderate rachitic rosary, a distended tympanic abdomen and typical x-ray changes in the lower ends of the ulna, radius and femur. The child, which had been on a diet of cow's milk exclusively until he was about eight months old, was given cow's milk with lactic acid cereal, egg yolk and vegetables. Vitamin D, cod liver oil, and ultraviolet radiation were administered. The infant was shown at the age of ten and a half months, at which time the general improvement was quite marked, and the x-ray examination showed complete regression of the bone changes. The second case was one of nutritional anemia in a child, sixteen months old, which had

been on a diet of cow's milk and which, when first seen, had a hemoglobin percentage of 23 and erythrocyte count of 2,220,000. After regulation of the diet, a small blood transfusion and administration of copper and iron the general condition rapidly improved, and the blood count returned to normal.

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Dr. Rees described the use of one per cent aqueous solution of gentian violet in the treatment of extensive cutaneous burns. The advantages of gentian

violet over tannic acid and other drugs, the technic of application, and the general management of the case were all briefly but comprehensively discussed, and two patients who had received the gentian violet treatment were shown. Both patients had been seen shortly after receiving their burns, which were very extensive, both patients were comfortable and free from pain within a short time after the application of gentian violet, both had been skin grafted and had healed without contractures.

Dr B D Adams presented two cases, one of lung abscess and one of chronic empyema, each treated by thoracoplasty. The first was a man, thirty one years of age, who developed an abscess of the lower lobe of the right lung following the development of osteomyelitis in a compound fracture of the mandible. Failing to get results from postural drainage and medical treatment, a preliminary operation was done at which time portions of the third, fourth and fifth right ribs were removed and gauze inserted to produce pleural adhesions. A week later, after a blood transfusion, the abscess cavity was explored, heavy suture material inserted into the mesial side of the roof of the cavity, and a portion of the roof cut away. The cavity was wiped with plain gauze and packed with weak iodoform gauze. The wound and fistula closed and three months later appeared to be well healed without residual infection. The second case was of a boy, fourteen years of age, who developed an empyema of the left pleural cavity following lobar pneumonia in the spring of 1933. Drainage proving unsuccessful, a two-stage thoracoplasty was done, with the removal of almost all of the upper ten left ribs. Following the second stage, the wound healed completely and the patient, with no apparent residual infection, was shown, five months after the wound closed.

Following Dr Adams' discussion, group demonstrations were conducted in different portions of the hospital. The Drinker Respirator was demonstrated by Dr E L Amidon.

'Determination of the Basal Metabolic Rate' was explained by Dr A G Mackay, who also demonstrated the metabolism machine.

Dr W R Doane demonstrated the electrocardiograph and methods of making electrocardiograms.

The afternoon session came to a close with the exhibition of several reels of motion pictures which showed the normal heart and its conduction pathways, with special reference to the production of the waves seen on the electrocardiogram, and the experimental production of the various arrhythmias in a dog's heart.

The Saturday morning session opened with a discussion of the Parkinsonian syndrome by Dr T J Allen, Assistant Professor of Neurology. This symptom group was described as characteristic of paralysis agitans and as a frequent sequela of encephalitis. The neuropathology was briefly considered,

and the various symptoms were described with reference to their characteristics. Two cases were presented, one a case of paralysis agitans in a patient showing the beneficial effect of tincture of stramonium, the other a case of a postencephalitic subject who also was being helped by stramonium. Dr Allen exhibited a number of photographs of children showing the postencephalitic variety and of adults showing the changes resulting from paralysis agitans. Particular emphasis was placed in the discussion on stramonium and scopolamine.

The Department of Medicine devoted the next hour and a quarter to the consideration of the rheumatic, syphilitic, arteriosclerotic and toxic heart conditions. Dr P K French, Associate Professor of Medicine, conducted the symposium and presented cases illustrative of the various conditions. X-ray films and electrocardiograms of each case were shown and explained and a general consideration of treatment followed. The use of digitalis, and mercurial diuretics was explained in detail as well as the general management of cardiac cases. Dr C A Rarey spoke briefly on anesthetic treatment, and Dr A B Soule, Jr, on the roentgenologic aspects of heart disease. Dr C H Beecher led the general discussion which followed. In closing, Dr French emphasized the fact that, while very little beyond supportive measures could be done for the advanced cardiac case, the patients with the early and milder lesions should be helped, and greater effort should be turned toward the case of this type of patient.

During the next hour, the Department of Surgery, under the direction of Dr Lyman Allen, Professor of Surgery, presented a group of unusual surgical cases, and Dr Allen spoke briefly on abdominal surgical emergencies. Dr Allen listed the commoner conditions which are ordinarily classed as abdominal emergencies and commented on some of the characteristic features of each. Among the things emphasized by Dr Allen were the following: Cathartics, especially castor oil are dangerous where appendicitis or obstruction is suspected; morphine, since it masks symptoms, should be given with caution if at all, the patient should be taken to the hospital as soon as possible as the mortality rises with every hour's delay; a carefully made though brief history of the attack should be made, noting the signs and symptoms in order of their occurrence, and this should be sent to the hospital with the patient, together with a history of previous abdominal symptoms known to the family physician.

Dr G M Sabin next presented three cases of fracture of the vertebral bodies, two with compression fractures of the lumbar vertebrae, and one with fracture of the twelfth dorsal vertebra and complete lateral dislocation all with complete recovery of sensation and motor control. X-ray films, lantern slides and the patients themselves were shown.

Dr W T Rees and Dr Lyman Allen then showed a man who had had a cholecystostomy in 1927, at which time the gall bladder walls were greatly

thickened and gangrenous and the gall bladder itself contained purulent fluid and thirty-one stones, in 1931, due to recurring jaundice, the gall bladder was again explored by Dr Rees, who found the cystic and hepatic ducts and remains of the gall bladder distended, being unable to reach the common duct on account of adhesions, a cholecystogastrostomy was done, followed by relief of jaundice. On February 8, 1933, on account of further recurrence of jaundice, a third operation had been done by Dr Allen who found that the stoma between the gall bladder and stomach had closed. A new and larger opening between the gall bladder and stomach was made, and the jaundice again disappeared.

Dr Rees then showed a woman who had received a lacerated and contused wound of the right arm from an automobile accident in 1932, with complete severance of the brachial artery, the median and ulnar nerves and biceps muscle. The operations for nerve suture and general repair were described and the patient demonstrated good return in function now eighteen months after the accident.

Dr Lyman Allen presented a case of a girl who had developed a gas bacillus infection following an appendectomy, and had been treated by serum therapy and wide incision. He also presented a case of extensive depressed fracture of the skull with hemiplegia, treated surgically, explaining the procedures followed. The hemiplegia had disappeared, but paralysis of the external rectus of the right eye persisted and was to be corrected by operation on the muscle.

Dr B. D. Adams next presented a case of fistula of the nose following basal cell cancer of a number of years duration which was repaired by use of a line-attached frontal flap by three stages. He also presented a case of plastic restoration of the lower lip following resection of an epithelioma of the lip. The operations done were briefly described.

The Obstetrics Department, as represented by Drs O. N. Eastman and H. A. Durfee demonstrated vaginal operative delivery technique using the anatomic manikin and an embalmed fetus. Podalic version by Potter's method and the Scanzoni operation were shown by Dr Eastman. Dr Durfee demonstrated simple low and mid forceps delivery and the use of the Piper forceps for the after-coming head. The relative merits of solid and fenestrated blades as well as the Klelland forceps were discussed and the advantages of true axis traction were

emphasized. A brief discussion of resuscitation methods followed, stress being laid on the use of the mucus aspirator and carbon dioxide-oxygen mixtures.

The meeting closed on Saturday, May 5, at 1 P. M.

VERMONT DEPARTMENT OF PUBLIC HEALTH

APRIL, 1934

The incidence of communicable disease for the month of April was as follows:

Chicken pox 153, diphtheria 1, measles 379, mumps 56, scarlet fever 37, typhoid fever 37, whooping cough 144 and tuberculosis 12.

During April, the Laboratory of Hygiene made a total of 1,542 examinations, classified in the following manner:

Examinations for diphtheria bacilli	86
" " Widal reaction of typhoid fever	33
" " undulant fever	26
" " gonococci in pus	95
" " tubercle bacilli	234
" " syphilis	472
" of water, chemical and bacteriological	71
" " water, bacteriological	199
" " milk, market	141
" " milk, submitted for chemical only	8
" " milk, submitted for microscopical only	102
" " foods	1
" " drugs	1
" for the courts, autopsies	1
" " the courts, miscellaneous	5
" of animal heads for evidence of rabies	1
" miscellaneous	63
Autopsies to complete death returns	1

The nurses in the Division of Poliomyelitis After-Care made fifty-six home visits. Two patients were admitted to the Audubon Hospital and one was discharged from this hospital. Two patients were admitted to the Children's Hospital. Eighteen new pieces of apparatus were fitted to patients and sixteen orthopedic corrections were made to shoes. The vocational worker of this division reports sales amounting to \$87.69 for the month.

NEW HAMPSHIRE MEDICAL SOCIETY

HOUSE OF DELEGATES

May 14, 15 and 16, 1934

THE House of Delegates convened at the Hotel Carpenter at Manchester, New Hampshire, on Monday evening, May 14, 1934, at seven-thirty o'clock in the evening

The meeting was called to order by Henry C Sanders, Jr., Vice-Speaker

Dr Sanders then called the roll, the following members being present

Robert J Graves, President
 Frederic P Lord, Vice-President
 Carleton R Metcalf, Secretary Treasurer
 Arthur M Fernald of Hampton
 Cleon W Colby of Exeter
 Charles H Parsons of Concord
 Clarence E Butterfield of Concord
 James B Woodman of Franklin
 Osmon H Hubbard of Keene
 Arthur W Hopkins of West Swanzey
 Kenneth Churchill of Lebanon
 Leslie Sycamore of Hanover
 Charles F Keeley of Claremont
 Henry C Sanders, Jr of Claremont.
 Roland J Joyce of Nashua
 Byron D Pease of Greenville
 Deering G Smith of Nashua
 George C Wilkins of Manchester
 Richard W Robinson of Laconia
 John R Perley of Laconia
 William J P Dye of Wolfeboro
 Francis J C Dube of Ossipee
 George C Rublee of Rochester
 Harry O Chesley of Dover

SPEAKER SANDERS The next business is the appointment of Committees I will appoint as the Committee on Credentials Dr James B Woodman of Franklin, Dr Kenneth Churchill of Lebanon and Dr John R Perley of Laconia, as the Committee on Officers' Reports Dr Deering G Smith, Dr Arthur W Hopkins and Dr John R Perley, as the Committee on Communications and Memorials Dr C H Parsons, Dr Kenneth Churchill and Dr George Rublee

Is the Committee on Credentials ready to report?

DR WOODMAN The credentials are in due form and the members are present

SPEAKER SANDERS The next order of business is the President's report

DR ROBERT J GRAVES I suppose every man who has been honored by election to the presidency of this ancient and honorable society has assumed office with the belief that there were many things which he could accomplish during his term for the good of the organization and of the public I was no exception

However, the ideas which I had last May for straightening out certain professional tangles

in the State and for advancing the interests of this Society in general, miscarried at about the end of the first month, to be supplanted by the mole of legislative wisdom, House Bill 417

Practically all of us in this Society were neophytes in such matters, but all showed a commendable willingness to cooperate with the State Relief Administration We almost at once were ready to function, but they were not It was not until after the turn of the year that the machinery began to click with a reasonable degree of smoothness Since then the cases have been much better handled, and the chief difficulties have arisen through misconception on the part of a very few of our members of the modus operandi of relief problems Personally I do not know yet whether Bill 417 taken as a whole and administered in a strict interpretation of its phraseology is good or bad I am inclined to believe that it is neither, altogether Its fundamental concept is sound, but no bill so radically departing from former procedure can properly function or be adequately evaluated when the time for setting up the machinery of administration is so short

With the ever-widening range of social and economic invasions into what were formerly strictly medical domains, a closer knit organization is essential for the preservation of our medical existence Dr Chesley ably advocated this last year in his presidential address

Now the president is in office but one year, and unless he be exceptional or has come up through the ranks of long time service in the House of Delegates and has served on important committees and the like, his term is likely to be nearly over before he has done more than kindle a few feeble fires which are without real effect in warming up the Society as a whole to the vital aspects of this problem

Not so the Secretary He is the real, continuing, motivating influence for our salvation

Few of us realize the amount of devoted energy which Dennis E Sullivan gave to our Society This was his avocation, this practically his only thought outside of his personal practice, his family and his church The importance of choosing wisely in the selection of his successor can hardly be overemphasized.

The time is coming when we cannot afford not to have an adequately paid full-time secretary, who will be constantly on the job, a triad of executive ability, political leadership and molder of public opinion

The matter of free clinics must have our ear-

nest consideration. A recent compilation by State departments reveals that there are over 11,000 school children showing one or more corrective defects. These are all below high-school age, in families actually unable to provide proper medical care for their children, and for these some way must be found to put them in the best possible condition for making a living and doing their work in the world.

However, year after year since 1919, the already existing agencies have obtained an ever increasing number of corrections. Confirming our belief that there is no necessity for setting up new procedures for handling this situation I wish to quote from a letter written by an official of the State Board of Education:

"Since the beginning of the school health program in 1919 by the State Board of Education, the development of the work has gone steadily forward. The success of the program is in no small way due to the wholehearted cooperation and support of the medical and dental professions. In practically every school district of the State where school nurses are employed, there exist pleasant and friendly relationships. Through these relationships advice and care are made possible for many children. We would regret exceedingly to see a program which has been firmly established interrupted or retarded at this time. Individual physicians, including specialists in various lines, have contributed generously of their skill and service, frequently with little or no remuneration. We have appreciated, too, their confidence and interest.

At the present time there are employed in the State forty-one (41) full-time school nurses whose time is divided between one or more school districts. Six (6) of these nurses serve Manchester. A single nurse frequently serves from five to ten districts. There are thirty-five (35) public health nurses whose duties include school nursing, and there are fifteen (15) part time school nurses and about seventy (70) school physicians."

These are but a few of the problems which have come up this year. They grow more complex month by month.

Report of the Secretary-Treasurer

To the Members of the House of Delegates of the New Hampshire Medical Society. The following report for the year 1933 is respectfully submitted:

Total Membership December 31 1933

PAID MEMBERSHIP

Belknap County	29
Carroll County	11
Cheshire County	27
Coos County	32
Grafton County	49
Hillsborough County	129
Merrimack County	53

Rockingham County	47
Strafford County	30
Sullivan County	19
Not in County Society	8
	434

UNPAID MEMBERSHIP

Affiliate Members	17
Not in good standing	21
Honorary Members	14
	52
Total Membership	486

The total membership at the end of 1932 was 487

FINANCIAL STATEMENT

Receipts

Jan 1, 1933 Balance forward	\$ 142 24
Rockingham County	282 00
Carroll County	60 00
Belknap County	180 00
Strafford County	174 00
Merrimack County	306 00
Hillsborough County	780 00
Sullivan County	114 00
Grafton County	306 00
Coos County	198 00
Cheshire County	158 00
Members not in County Societies	56 00
Net receipts annual meeting	338 86
Balance Women's Auxiliary	21 00
Miscellaneous receipts	45 16
	\$3161 26

Expenditures

Postage and stamped envelopes	43 82
Evans Printing Co. Ledger cards	1 80
May The Printer 500 Envelopes	1 50
Bridge & Byron, 700 programs	34 00
E. C. Eastman 200 clasp envelopes	2 00
D. E. Sullivan, Salary	500 00
George C. Wilkins Com. Control of Cancer	50 00
John P. Bowler	3 00
W. P. Bowers Sec. N. E. M. C.	
Pro-rate expense	53 08
Prav Prize essay expense	5 75
Robbins Co. 3 gold medals	39 24
N. H. Savings Bank Benevolence Fund	238 50
Dr. Alfred T. Bazin Guest	40 36
Annual Meeting Guests	14 00
Auto Hire John Hackett Dr. Carv	
Boston to Manchester	15 00
Mechanics Bank Taxes	74
Telephone	11 60
Madelaine A. May Stenographer	77 89
Concord Business College Stenographer	4 20
Mrs. Ezra Jones Women's Auxiliary State Approp'n	100 00
Trustees	800 00
Eagle Hotel, Dinner County Sec. Conference	14 75
N. E. Journal Subscription	516 64
N. E. Journal Reprints	20 30
Annual Transactions	357 89
	\$2946 06

Jan 1 1934 Balance in check book	209 20
Dues Dr Tarbell Credited 12/26/33 Deposited 2/13/34	\$3155 26
	6 00
	\$3161 26

Dennis E Sullivan, for the past twenty-eight years Secretary of the New Hampshire Medical Society, died on January 19, 1934. His work in behalf of our Society throughout this long period was painstaking and intelligent, his duties so manifold that they demanded continuous and aggressive effort. This is a fact, gentlemen, not fancy, reality, not euphemism. Dr Sullivan delegated little, he was so constituted that he preferred to do things himself. Though few realize it, he was literally on the job day in and day out. Our Society is greatly indebted, then, to Dr Sullivan for this faithful, untiring service.

We should record, also, with sincere regret, the death of two other officers of this Society during the past year.

Eugene B Eastman, Portsmouth
William H Leith Lancaster

At this annual meeting we are adding two names to the rôle of those who have been members for a continuous period of fifty years.

Leonard Jarvis, Claremont
George E Leete, Concord

Each of these men will receive a gold medal, suitably engraved, at the general meeting on Tuesday afternoon.

At the same time, the following New Hampshire physicians who have completed fifty years in practice will receive a cordial greeting from the Society.

Walter R Sanders, Derry Village
Roscoe G Blanchard, Dover
Charles W Adams, Franklin
Frank A Smith, Lebanon
Frank S Lovering, Moultonboro
Ezra C Chase, Plymouth
George W Nutter, Salmon Falls

I have wondered if a gold medal is the most suitable gift for a half century member. Most medals repose in top bureau drawers. Would it be more appropriate to award a silver loving cup, suitably engraved, which could be displayed on the mantel piece?

Men who are eligible this year to become affiliate members are as follows:

Albert S Dolloff, New Hampton
Frederick L Hawkins, Meredith
Joseph J Cobb, Berlin
Edward E Twombly, Colebrook
Henry M Wiggin, Whitefield
N F Cheever, Greenfield
A W Petit, Manchester
B G Moran, Nashua

President Graves appointed James J Powers, Manchester Anniversary Chairman, and David W Parker a member of the New England Medical Council with term expiring in 1936.

The President also appointed Carleton R Metcalf, Concord, as Secretary-Treasurer pro tem to carry on the duties of the late Dr Sullivan until a Secretary-Treasurer is duly elected at this meeting.

The President invited the County Secretaries to Concord last Fall for the usual conference. Lunch was served at the Eagle Hotel and a lengthy discussion ensued in regard to the State Welfare work, particularly in its relations to the doctors of the State. Miss Patch, Supervisor of the Welfare work, was present.

In a communication from the State Librarian last year an offer was made to cooperate with us in reorganizing and rejuvenating the medical books in the State Library. Of recent years the collection has consisted largely of obsolete textbooks which are practically never read.

Charles H Parsons, Concord, was asked to decide, after conference with the State Librarian, what action had better be taken in this matter. Doctor Parsons is here to night and, when the Speaker so elects, will read you his report.

I have in my home in Concord the records and annual reports of the State Society dating back nearly one hundred years. The reports in particular, are of value. They repose for many years in Doctor Sullivan's office, but it seems to me that they might well be housed in the State Library or in the Library of the New Hampshire Historical Society, unless one or both of these organizations already have a complete file.

Robert O Blood, Concord, has also been invited to read a report to the House of Delegates. At the request of the New England Obstetrical and Gynecological Society, Doctor Blood has considered the formation of a Committee within our group, similar to the Committee on Cancer, to consider the improvement within the State of these two special lines of medicine. The New England Society feels that the several States will tend more and more to regulate and socialize the care of women and children unless the doctors bestir themselves.

In this connection, one thinks of crippled children. The State Board of Education, through its school nurses, is searching out these unfortunate waifs and making arrangements for their hospital care. Is the ground being thoroughly covered? Are there still in the State, bedridden children who, under proper treatment, could become ambulatory? Should our Society definitely cooperate in this work and if so, how?

I have been somewhat disturbed by the inactivity of some of the units of the Women's Auxiliary to the New Hampshire Medical Society. I believe that the Women's Auxiliary is a worthwhile organization, that it should be nourished and encouraged. I know of one County Society that is ready this year to contribute \$25.00 to our Benevolence Fund if we wish it. This same County Society is also planning to award a cash prize annually to the outstanding nurse in the graduating class of each of the hospitals in this particular county, but such enthusiasm is not universal.

If it is to thrive and prosper, the Auxiliary needs a definite job. Would it be well to ask the ladies to do something each year for the Benevolence Fund? Is this another chore to pass on to the long suffering county secretaries?

The Benevolence Fund has now reached the respectable sum of \$640.51. For the benefit of newer delegates, may I explain that fifty cents is reserved from the annual dues of each member to create this fund. The income of the fund at the discretion of the Trustees, the President and the Secretary-Treasurer, may be used to render pecuniary aid to needy members who are ill, disabled or aged, or to needy widows and children of deceased members.

A few of the County Societies seem to have difficulty in getting suitable speakers for their meetings. Would it be feasible to establish a lecture bureau to minimize this difficulty, with the lecturers chosen from our own members?

The State Legislature sits next year, and in the ordinary course of events, numerous bills of medical concern will be presented. There have been instances in the past where Dr Sullivan has been the only member of the New Hampshire Medical Society to appear and to speak at an important hearing. This is wrong. There should be a small group of our officers or of our wiser colleagues who would be ready to attend these hearings in case of need.

In May, 1933, the House of Delegates voted that the Standing Committee on Amendments to the

Constitution and By Laws be authorized to prepare a model Constitution and By Laws for County Societies"

This new Constitution and By Laws has already been placed in the hands of the Committee on Officers Reports of which Deering G Smith, Nashua is Chairman

A booklet containing the Constitution and By Laws of our State Society was last published in 1927 Since then various changes in the by-laws have been made and the interpretation of a few has been in question A suggestion has been made that a new edition of this booklet be published within the next year or two for distribution among the members of our Society

Since Doctor Sullivan's death the scientific program for this year has been in the hands of Richard W Robinson Laconia and Frederick P Scribner Manchester They have worked hard, conferred often, and are presenting to you tomorrow and Wednesday a group of speakers who will meet with your entire approval I am extending to them my heartfelt thanks for relieving me at this time of this particular detail which ordinarily falls largely on the shoulders of the Secretary

To the County Secretaries also and to many other members of the Society I am greatly indebted for the cordial and prompt cooperation that has been given me in undertaking a new, uncharted and intricate task.

CARLETON R. METCALF
Secretary Treasurer

Reports of Councilors

BELKNAP COUNTY

The Belknap County Medical Society held six meetings during the year November to April inclusive The average attendance was higher than usual The year was unusual from the fact that we were able to secure several papers from the members of the society The society lost one member by death Dr N W MacMurphy of Belmont and gained three new members Drs Stewart, LaFrance and Hill

C S ABBOTT
Councilor

CARROLL COUNTY

During the past year the Carroll County Medical Society has held three meetings at the Center Ossipee Inn.

We were pleased to have Dr Graves with us at our August meeting In December Dr Gordon Morrison of Boston gave an excellent paper on some common fractures

At our last meeting in April papers were given by our own members

CHARLES E SMITH
Councilor

CHESHIRE COUNTY

The Cheshire County Medical Society had a very quiet year in 1933 and there is practically nothing to report to the State Society

A. A. PRATTIE,
Councilor

COOS COUNTY

The Coos County Medical Society has held two meetings the past year as usual one in the Fall and one in the Spring These meetings have been well attended and helpful.

All the physicians of the county are enrolled in its membership but there are a few whom one never sees at a meeting This is unfortunate for the society but even more so for the absent members as

I believe there is much to be gained in these meetings for every practitioner

Our programs are made up mostly with the aid of outside speakers It is regrettable that our own men are so loath to write and read papers, notwithstanding the fact that there are no abler men in the profession than those found here in our northernmost county

RICHARD E. WILDER
Councilor

GRAFTON COUNTY

The Spring meeting was held at the Littleton Hospital and the members were guests of the Hospital Trustees at luncheon, following the meeting An inspection of the rebuilt hospital was made at this time

The program was furnished by the Littleton members There was a good attendance

The annual meeting was held in Hanover at the Marv Hitchcock Hospital The usual business was disposed of and the members were luncheon guests of the Hospital and Trustees The meeting was held in the assembly room of the Dick Hall House where the society was given a most instructive talk on Endocrinology, by Doctor Reginald Fitz of the Harvard Medical School

A. T. DOWNING,
Councilor

HILLSBOROUGH COUNTY

The Hillsborough County Medical Society during the last year had the largest membership it has had in many years We have lost three members by death during this time

The fall meeting was held at the Hillsborough County Hospital Clinics were held and cases demonstrated after which by the courtesy of the County Commissioners we were served a very fine dinner

In the afternoon Mr E H Hunter of Hanover outlined the present welfare situation that is being carried out in this state There was great interest and much discussion over this topic

There were also papers by Dr G C Wilkins of Manchester and Dr R H Southwick of Boston

The spring meeting was held at Wilton N H and after business was transacted Dr Norman W Crisp of Nashua gave a paper on Surgical Lesions of the Stomach and Duodenum and Dr James P O'Hare of Boston gave a talk on Uremia and Hypertensive Encephalopathy

Luncheon was served with the compliments of David Whiting & Sons Inc. and the entire meeting including the Women's Auxiliary was given a trip through the Hampshire Hills Dairy, where the production of certified milk was shown in the ultra-modern milking parlor Dr Richard S Eustis of Boston gave a talk on Vitamin Milks and the different methods of production

This year the County has had a relations committee to act as an intermediary between the welfare activities and the physician. There have been many controversies and problems brought to its attention which were satisfactorily handled through this committee

CLARENCE O. COBURN
Councilor

MERRIMACK COUNTY

The Center District & Merrimack County Medical Society has held four meetings during the past year, all at the Eagle Hotel Concord N H

July 19 1933 The general subject of Medical Care of the County Poor was discussed by Dr R J Graves President of the New Hampshire Medical Society and by Dr D E Sullivan

October 5, 1933, at an open meeting the subject of medical relief was discussed. Dr Graves presented the subject of thyroidectomy for relief of angina.

At the annual meeting January 5, 1934, Dr T P Burroughs, City Health Officer, read an interesting paper on the general subject of public health.

Officers elected

President, Dr W. C. Rowe, Concord.

Vice President, Dr J B Woodman, Franklin.

Secretary Treasurer, Dr C H Parsons, Concord

On April 4, 1934 Dr R E Miller of Hanover gave an address on Cancer

The Society has admitted to membership during the year, Dr Norris of New London, Dr McCarthy of Concord, and Dr LeBlanc of Suncook

We note with special regret the death of Dr D E Sullivan

H. H. AMSDEN,
Councilor

ROCKINGHAM COUNTY

During the past year two meetings were held. The annual meeting was in October at the County Building, Exeter. Exceptionally valuable and interesting papers were presented by Doctors Herbert L. Taylor, L R Hazzard, and E A Vickery all of Portsmouth and Dr D E Higgins of Epping.

Our late and lamented Secretary, Dr D E Sullivan, was present and shared in the discussion of the papers. Possibly he flattered us a bit when he said that it was one of the best County meetings he ever attended that all the papers were by local members and all worthy of appearance in the state program.

The Spring meeting was held at the Portsmouth Hospital in April. After some business and presentation of dry clinic cases by members, Dr Chester F McGill demonstrated in rabbits the Aschheim Zondek Reaction. It was interesting, convincing and novel to most of us.

At 11 00 A M Dr Edward DeLos Churchill of the Massachusetts General Hospital read a wonderful paper on Thoracic Surgery and kindly answered many questions relating to modern methods. A generous luncheon was served at the hospital.

In the afternoon Dr Robert L DeNormandie delivered an address "Obstetrics in Retrospect." To us older members it was like reviewing the scenes and experiences of childhood. To the younger probably much seemed strange if not improbable. Yet in that period most patients, both mother and baby, survived.

Since our last report death has claimed two active, strong members our President Dr Eugene B Eastman, Portsmouth and Dr Joseph C Tappan, Derry.

The addition of one new member makes our net loss one.

ABRAHAM W MITCHELL,
Councilor

STRAFFORD COUNTY

Three meetings of the Strafford County Medical Society were held during the year 1933. The first meeting was on July 25 at the American House, Dover N H., at which time there was a very active general discussion relative to the attitude of the members of this society toward the welfare work and it was decided to lay the matter on the table for the present.

On August 4 the above meeting was continued with Dr Robert Graves state president, as well as the late Dr Sullivan secretary. Once again this matter of the fees and cooperation with the state relative to the poor, etc., was carefully gone into and it

was finally voted after a lengthy discussion to accept the scale of fees other societies had taken.

On November 9 the annual meeting was held at the Gray Tower Motor Inn at Rochester, N H. Following the election of officers, Dr Lewis M Hursthal (Boston) gave a very interesting paper on the "Mechanism of the Heart Beat."

This was followed by a general discussion. Three new members were voted into the Strafford County Medical Society, Dr W E Precourt, Somersworth, Dr Prince, Durham and Dr W B Rahmanop, Dover.

We are sorry to report the death of Dr A E Grant of Durham on December 8 from mesenteric thrombosis.

J A. HUNTER,
Councilor

SULLIVAN COUNTY

The Sullivan County Medical Society has enjoyed its usual amount of activity during the past year. At a meeting in the summer, held in Claremont, Dr Graves, President of the State Society, and Dr Sullivan, Secretary, were present and outlined the work to be undertaken by the state welfare. The question of a fee table for the welfare cases was discussed and it was voted to accept the table adopted by the State Society.

The annual meeting was held in Claremont in December, at which time a paper was read by Dr Hau brich of Claremont and discussed by various members of the society. The meetings were well attended and much interest was shown in the general proceedings.

EMERY M. FITCH,
Councilor

SPEAKER SANDERS Dr Syvertsen has a report which he would like to make.

DR. SYVERTSEN During one of the meetings of the Welfare Council held at Concord, it was announced that a fund of \$40,000 had been obtained from the Federal Government to serve as a work relief project to employ forty nurses for a year, or the larger part of a year. This fund, and this personnel of nurses, were to be used in making a state-wide survey of remediable physical defects among the children in the State, under high-school age. I was asked to serve on the Committee to supervise the work of this group. Mr Pringle of the State Board of Education, Dr Kerr and Mrs Abbie L Wilder, the Federal Employment Director, were also members of this Committee. After the appointment of this Committee, and in fact on that very day, we had a meeting and decided that it would be regrettable if a large new agency were set up in the State to spend this \$40,000 entirely in the work of making a survey, when, in all probability, all data were available in the records of either the State Board of Health or the State Board of Education.

So, we proceeded, with the assumption that if the data from such a survey could be presented to the authorities in Washington, it might be possible to salvage this fund, for use in actual work.

In proceeding with this assumption, Dr Dun-

can's office and Mr Pringle's office were asked to canvass their workers throughout the State and to assemble at Concord the necessary information. This survey was partly completed, when Dr Ellhott, from the Children's Bureau in Washington came to Concord to confer with us, and we were able to convince her, at least temporarily, that the survey was proceeding with sufficient success to assume the possibility that it would not be necessary to spend any of this money in acquiring data.

When the survey was finally completed a member of the Committee took it to Washington and secured the promise that we might use the \$40,000 in corrective work.

It was felt by the Committee that it would be extremely undesirable in view of the already existing agencies to establish any new group for the purpose of doing something which could be possibly done by organizations in existence. With that idea in mind we decided to analyze our data. We found that in the State there were some 11,813 children reported as afflicted with remediable defects that might be corrected.

It has been the feeling of the Committee that there are, in the state, agencies which could take care of these defects with the funds which have been available in the past and are still available, and if it is actually merely a matter of funds it is possible that by subsidy, or by subsidizing these agencies with this money, the program can be continued to a satisfactory conclusion.

We expect that if we can have the whole-hearted cooperation and encouragement of the State Medical and Dental Societies, with this money a large forward step can be made toward correcting this problem.

As Chairman of this Committee, I would like to ask the New Hampshire Medical Society to give us this whole-hearted cooperation and encouragement, because all of this work should spring from and be initiated in the State Society, and, if we are to obviate the entrance into the field of large lay groups that are equally concerned with this matter we must make some sort of a movement in the right direction.

I would like to ask some one if he will make a motion, that a Committee of three be appointed by the President, to be known as the Child Health Committee of the New Hampshire Medical Society and further that a similar committee be established in each county to function in a respective manner for the county.

DR. ROBERT J. GRAVES. I would like to make the motion which Dr Svendsen has suggested.

DR. FREDERIC P. LORD. I would like to second the motion, and to express my own feeling that it should be a separate committee of three

SPEAKER SANDERS. It has been moved and seconded that a Committee of three be appointed by the President, to be known as the Child Health Committee of the New Hampshire Medical Society, which shall act for the society in the emergency matters concerning child health, and which shall serve as the beginning toward cooperation with and coordination of all agencies within and without the State, which are concerned with Child Health, and, further, that a similar committee be established in each county to function in a respective manner for the counties. This committee shall serve for one year. The motion was carried.

Report on State Library

DR. C. H. PARSONS. The books and periodicals in the New Hampshire State Library were carefully checked over, with the cooperation of Miss Thelma Brackett, the State Librarian. The books were found to consist of two groups, those of some slight historical interest, and those which were entirely worthless for any purpose, the latter being in the majority. It was found that the books had been borrowed very infrequently, that they had been consulted in the Library very infrequently. The periodicals were not of a great deal of practical value.

With the cooperation of Miss Brackett, many of the textbooks were discarded. The majority of the periodicals in the files were discarded. The following journals were subscribed to:

American Journal of Diseases of Children
American Journal of Psychiatry
American Journal of Medical Sciences
Archives of Internal Medicine
New England Journal of Medicine

These were subscribed to because they were the journals that were most frequently requested by the very few physicians who came into the Library.

It was decided that it was inadvisable to purchase any medical textbooks.

SPEAKER SANDERS. I will now call for the various reports. I believe that Dr Metcalf has two reports to give us.

Report of the Committee on Scientific Work

Your Committee met several times to arrange the program for the annual meeting, the earlier meetings being held before Dr Sullivan's death. The Committee has conferred also with the President of the Society with County Secretaries and with individual members.

The Committee would like to learn of suitable original papers which are read at meetings of the County Societies. Many of them could be re-read with profit at the annual meeting of the State Society. In an effort to unearth new material a postal card was recently sent to each member of the Society suggesting that he or she prepare a paper for 1935 or 1936.

The program for this year's annual meeting has been printed and distributed to the entire membership as usual

RICHARD W. ROBINSON,
FREDERICK P. SCRIBNER,
CARLETON R. METCALF

Report of the Committee on Publications

The contract with the *New England Journal of Medicine* has been continued during the past year. The *Journal* gives our Society a definite number of pages in its first edition each month, and prints our Annual Transactions. Each paid up member of our Society receives one copy of the *Journal* a month.

We are anxious to have the county societies send, for publication in the *Journal*, papers read at their meetings, news items, case reports and similar material.

Secretaries of the several County Societies are urged to cooperate in this matter.

BENJAMIN P. BURPEE,
LAWRENCE R. HAZZARD,
CARLETON R. METCALF

Report of the Committee on Constitution and By-Laws

In May, 1933, the House of Delegates voted that "The Standing Committee on Amendments to the Constitution and By-Laws be authorized to prepare a model Constitution and By-Laws for County Societies."

In accordance with this vote, the Committee has prepared a Constitution and By-Laws (herewith submitted) based on the model prepared by the Committee of the American Medical Association, but with several important modifications. It is nearly identical with the present Constitution and By-Laws of the Hillsborough County Medical Society, which were adopted in 1929.

HENRY O. SMITH,
THOMAS W. LUCE,
FRED E. CLOW

SPEAKER SANDERS Will Dr Henry O Smith please be kind enough to summarize the report

DR. HENRY O. SMITH The model Constitution, adopted by the American Medical Association, formed the basis of the Constitution and By-Laws adopted, but with quite a few modifications. With reference to business matters, there were several changes looking to a more simple method of doing business. For instance, in the model constitution, as recommended by the American Medical Association, the Treasurer was allowed to pay bills, only on the order of the President, countersigned by the Secretary, and on various other matters, it seemed to us that unnecessary verbiage and unnecessary work were entailed.

The chief addition that your Committee embodied was this, that the delegates to this House should be elected for a two-year term. I would like to say that this was the one change that Dr Sullivan was very anxious to see incorporated in our by-laws, because that would seem to insure the presence, in our House, of at least fifty per cent of the members with experience.

SPEAKER SANDERS This report is auto-

matically referred to the Committee on Officers' Reports.

Dr Parker now has a report to make.

DR. DAVID W. PARKER It has always been my judgment that the New England Medical Council has been, and is, of definite value to the New Hampshire Medical Society, and to the medical societies of the several States of New England, because this organization furnishes the opportunity for the representatives of these several societies to discuss and act upon problems which are of equal interest to the medical profession of all the States. Not infrequently, these problems are of paramount importance, and can be successfully solved only by concerted action of the representatives of these several State societies. It is my feeling that the Council has justified its existence by its action on the prevention of malpractice suits, and its clarification of the problem of reciprocity between States.

There has been a feeling on the part of several of the State delegations that the assessments for expenses should be based on the membership of the several State societies. The organization of this body is analogous to that of the Senate—that is, equal representation from each State, regardless of the membership of the State society. On that basis it has seemed to me fair and equitable that the expense of the organization should be borne equally by the several States, especially as these expenses are not heavy.

It would seem to me that the continuance of this organization might be of distinct future value to our Society.

DR. FREDERIC P. LORD Mr Speaker, I would like to ask Dr Parker if the New England Medical Council is defunct and will not meet unless something is done?

DR. PARKER From this letter of Dr Bowers, I assume that is a fact, unless the State Societies do express a desire to have it continued. My reaction was that if we passed favorably on that, and forwarded our decision to Dr Bowers, it might be brought up before the other State Societies and they might take action on it, that is, to perpetuate it, on this plan.

DR. LORD What is the extent of the contribution?

DR. PARKER Each society appropriates one hundred dollars, but I can't tell you what the actual expense is.

SPEAKER SANDERS This report will be automatically referred to the Committee on Reports. I will now call upon Dr Smith for further reports at this time.

DR DEERING G. SMITH The special committee on Medical Liability Insurance has had the subject under consideration for two years. We have sought advice from representatives of insurance companies, in conference and by mail, with officers and members of your society, as well as from a similar committee in Vermont. Our report falls into two sections.

I Advisory Committee on Medical Jurisprudence

Your committee is of the opinion that the name and definition of the duties of the Committee on Medical Jurisprudence could, with advantage to us all be changed. The scope of activity of the committee should be broadened to include friendly arbitration between physician and physician as well as between patient and physician. It should include arbitration between patient and physician before the stage of legal action begins. The name should be changed so that it will indicate these improvements.

Your committee believes that procedures within the committee and the conduct of hearings could be modified with the result that any accused man would be inclined more than at present, to bring his troubles promptly and candidly to a group who will listen sympathetically without outside aid or influence. The latter suggestion can be adopted by the group without legislation. The committee on jurisprudence should give aid and assistance to men insured in any company or association or who are not insured at all. The benefits of the committee should be available to our members without exception.

II The Insurance Group

The group of men insured in the company recommended by the society varies in size but has a tendency to grow smaller. Many factors enter into the cause of this situation: prohibitive expense of any insurance in these days of depleted incomes, the particular company with which we have done business, the attitude of the local agent, past experience and a number of other reasons prevent the growth we had hoped. Nothing can be done as missionary work save in the smaller groups of men meeting in the county society to overcome these objections. Many of the men who have left the group attend no society meetings.

Your committee studied the Vermont Plan where each member of the State society is automatically protected in suits with insurance purchased by him self to cover judgments and settlements. It is evidently impossible to establish this plan in our State. Vermont has a homogeneous and coherent membership. Every man is doing his part to lessen the incidence of suits and threatened suits. The plan has been operating for years and a comfortable surplus has been accumulated. Your committee can but express its regret that New Hampshire has not a similar plan. The more closely men are allied in an enterprise of this sort, the keener the individual vigilance upon which all success must be founded.

Recommendations 1 We recommend that the name and definition of the Advisory Committee on Medical Jurisprudence be changed after study by the Committee and the Committee on Constitution and By Laws.

2 We recommend that since some expense has been incurred but no bills have been rendered the appropriation of last year (one hundred dollars) be voted again for the purposes of this Committee.

3 We recommend that the Committee be continued for one year.

FEED E. CLOW
DEERING G. SMITH
RICHARD ROBINSON

SPEAKER SANDERS I will now call for further reports of various committees, the first being the Committee on Tuberculosis.

Report of the Committee on Tuberculosis

It is in many ways a remarkable fact that after four years of serious economic depression, the tuberculosis death rate should continue its declining trend for much historical and present-day discussion has stressed the close relation between the tuberculosis death rate and economic and social conditions.

For the year 1920 the tuberculosis death rate was 97 per 100,000 in the State of New Hampshire. In the year 1925 the rate had declined to 66. In 1930 to 53.1 and in 1932 to 44.9—the lowest in the New England States and one of the lowest in all the States of the Union. The figures for 1933 are not as yet available but there is reasonable expectation that the phenomenal reductions will be maintained and added to in 1933.

During the years of normal economic conditions and in periods of economic prosperity the reductions in the tuberculosis death rate have been ascribed in a greater or lesser degree to the improvement in standards of living for the masses of the people, particularly among the workers in industry. If the all important factor is improved living conditions then the past four years of distress should be witnessing increasing morbidity and mortality from tuberculosis. Yet there is no definite evidence to indicate such a tendency. On the other hand we know that the 'development of tuberculosis' is not an overnight matter; that the manifesting of active tuberculosis disease occurs in the great majority of cases only after a long period of combat between the tuberculosis germs and the tissues of the human beings in whom they have become established. How long this period of attrition may be is hard to estimate, but in many cases a matter of months and years. It is easily conceivable that the physical and mental distress suffered by the people in these past four difficult years may yet manifest itself in the years ahead in increased prevalence of and deaths from tuberculosis.

However we have every reason to feel that the forces for the control of tuberculosis among the people of New Hampshire have been so well organized and coordinated as to take care, not only of the usual tuberculosis load but also of any accretions resulting from the economic depression. The effect of the work of the last twenty or twenty-five years has been cumulative in character. The people of New Hampshire, through the legislative bodies, have been alert to the necessity for caring for the tuberculous. Philanthropic and public spirited citizens have given of their means to finance the tuberculosis campaign in the field through the work of the tuberculosis clinics and nurses. Public health agencies of New Hampshire have been active participants in the tuberculosis campaign. The medical profession of the State has been increasingly active and is becoming more and more skilled in the diagnosis and treatment of the disease. Our sanatoria are expanding their facilities and their service in arresting tuberculosis and in restoring patients to working capacity on a large scale. Their annual contribution to the saving of lives is a large one and very tangible. Of recent years pneumothorax, phrenicotomy and thoracoplasty are being used as valuable adjuncts to sanatorium treatment in certain types of cases.

Our own sanatorium at Glenciff has employed these additional methods of treatment with promising results.

There is a waiting list for admission to both sanatoria at Glenciff and Pembroke but the interval between application and admission is not a lengthy

one In our neighboring State of Massachusetts the waiting period is about four months behind the application for admission in many of the county sanatoria

The large reduction in tuberculosis deaths during the past fifteen years in the State means that there are fewer advanced cases capable of producing new infections and victims in the community. Fewer infections means fewer active cases in later years. There is thus set up a beneficent circle which serves to protect the community.

It is apparent, however, that any breakdown in the intensive program of tuberculosis control through out the State would be a tragic circumstance at this time. It is a cause for considerable gratification that the intensive program is to be continued and that the service has the active participation of the physicians of the State.

Respectfully submitted,

R. B. KERR, Manchester,
R. M. DEMING, Glencliff
A. L. WALLACE, Nashua

Report of Necrologist

1933

Winfred M. Dowlin, Claremont, N. H. Died April 12, 1933
Samuel Ferguson, Goffstown, N. H. Died April 24, 1933
Jane Hoyt Stevens, Concord, N. H. Died July 1, 1933
Ella Atherton, Nashua, N. H. Died September 4, 1933
Eugene B. Eastman, Portsmouth, N. H. Died September 6, 1933
Walter L. Kelso, Hillsborough, N. H. Died September 13, 1933
Fred C. Russell, Haverhill, N. H. Died November 4, 1933
Nelson W. MacMurphy, Belmont, N. H. Died November 23, 1933
Ernest A. Grant, Durham, N. H. Died December 8, 1933
George M. Watson, Manchester, N. H. Died December 13, 1933
Joseph C. Tappan, Derry, N. H. Died December 19, 1933

1934

Walter H. Abbott, Warner, N. H. Died January 10, 1934
Dennis E. Sullivan, Concord, N. H. Died January 19, 1934
Cheney I. Cole, Goffstown, N. H. Died February 26, 1934
William H. Leith, Lancaster, N. H. Died April 3, 1934
Harry H. Boynton, Lisbon, N. H. Died April 23, 1934

Report of the Committee on Mental and Social Hygiene

The last decade has witnessed a definite change in the attitude of the profession toward psychiatry. Before then psychiatric problems were considered by the average medical man to be of an occult nature smacking of mysticism and metaphysics with little of scientific background to make them attractive and the psychiatrist was rated more as a custodian of demented and defective than as a practitioner of medicine. To-day psychiatry not only ranks as one of the important specialties of medicine but it is so definitely interwoven with the etiology and treatment of all other forms of disease as to suggest that no all-round medical man can afford to

ignore altogether the psychiatric point of view. The personality make-up of a patient suffering from hyperthyroidism, hypertension, angina pectoris or gastrointestinal disturbances is often of the greatest importance in the etiology. Every urologist now knows that impotence is frequently not of organic origin and that the pediatrician certainly needs some help or understanding in dealing with the behavior problems of his children. For these reasons, medical schools are devoting a great deal more time to neuropsychiatry and many are requiring first hand acquaintance with a certain number of such cases before graduation.

The general practitioner, however, as a rule, has taken little advantage of the recent advances in psychiatric research and treatment, and to him the state hospital oftentimes still remains just an insane asylum.

The clinical facilities of the New Hampshire State Hospital are open to the medical profession of our state and the general practitioner is invited to visit the hospital and make the rounds with the members of the hospital staff. Such visits would act as a stimulating influence on the hospital staff, and at the same time would serve to acquaint the visitor with modern methods of treatment and care in mental hospitals.

In the past five years the daily average of our State Hospital has increased 235. This is largely due to the fact that many patients with only slight mental damage are now being sent to the hospital. Whether the burden of caring for many of this type belongs upon the hospital is open to question. During the past year twenty eight patients were considered to have no psychosis.

In several instances, committing physicians have failed to carry out the commitment procedure required by law. In a few cases the patient at the time of commitment was not seen at all by one of the physicians, and in two instances during the past year, lawsuits have been instituted on the grounds of illegal commitment.

Every case that now leaves the hospital is discharged on probation, and is returnable at any time within six months without a new commitment. The law should be changed, lengthening the parole period to one year.

In order to treat successfully mental disorders, early diagnosis is important, and to prevent mental disease, the correction of faulty mental trends must be recognized in the child or adolescent.

Mental hygiene clinics for the prevention and treatment of incipient cases are now being established at strategic points of the state but these cannot be established and maintained without sufficient funds being appropriated to support them.

The establishment of a children's ward at the State Hospital, devoted primarily to the study of neuropsychiatric conditions in children is an outstanding need in the mental hygiene program of the state. In order that such a ward may function successfully, the cooperation of the medical profession is required. Sterilizations are still being done at the State Hospital and State School as a contribution to the prevention program.

CHARLES H. DOLLOFF
For the Committee

SPEAKER SANDERS Is there any new business to come before the meeting?

Report of the Committee on Public Relations, Public Policy and Legislation

The Committee on Public Relations, Public Policy and Legislation of the New Hampshire Medical Society has held no meetings for we felt that for

any activities before the General Court at its next meeting a concerted program and definite action should be taken with the elected members of the General Court, so that when these different projects will be brought to their attention, we would have friends to deal with rather than coming into General Court as strangers

SAMUEL T. LADD
Chairman of the Committee

SPEAKER SANDERS At this time, I will call upon Dr. George C. Wilkins to give the report of the Committee on Control of Cancer

Report of the Committee on Control of Cancer

During the past year your committee has distributed less literature to the medical profession and nurses because of the withdrawal of free distribution by the American Society for the Control of Cancer. This Society will continue to furnish pamphlets at the request of the committee or at the request of any physician but owing to the necessity for retrenchment it has been obliged to apply what amounts to a cost charge when pamphlets are furnished. Your committee has limited its distribution to two letter sheets containing short but pointed observations on cancer diagnosis and care. We feel that distribution to the medical profession of pertinent information in a short, easily read form is an admirable way to disseminate cancer information. Whether this gratuitous information is appreciated or even wanted by the physicians of the State, we have no way of knowing. Only one comment has been received during the past year by any member of the committee from any member of the medical society.

Your committee was twice invited by Governor Winant to conferences with the State Cancer Commission and was able to offer helpful suggestions in the formation of the various cancer clinics which have been sponsored by the commission through the State Board of Health. We believe that these ten clinics in the State will become the nucleus of a group of men who are honestly interested in early cancer diagnosis and early treatment. We believe these groups consisting of members of our society will have an important part in educating both the laity and the physicians in developing a proper attitude toward early and correct diagnosis. It should be borne in mind by every member of the Medical Society that these clinics offer assistance to any doctor in the State in helping him to make a diagnosis in suspected cancer. They are equipped to make biopsies, laboratory examinations and x-ray diagnoses.

A year ago your committee recommended that every county society be requested to devote one meeting of the year to a symposium on cancer with special reference to diagnosis and selective methods of treatment. Your committee has no information at hand as to whether this suggestion was accepted by the county societies but this year we reiterate the importance of such a program and hope the county societies will carry out this recommendation during the ensuing year.

Your committee has not expended the seventy-five dollars (\$75.00) appropriated last year as there was an unexpended balance from the previous year which has been available and which is now exhausted. The committee requests an appropriation of fifty dollars (\$50.00) for the following year:

GEORGE C. WILKINS
GEORGE F. DWYELL,
HOWARD N. KINGFORD

SPEAKER SANDERS Is there any new business to come before the meeting?

DR. D. G. SMITH Due to the fact that no provision has been made for remitting the dues of the members of our societies who are totally disabled before they reach the age of sixty-five (65), the Hillsborough County Medical Society on April 10, 1934 voted

1 That our delegates to the New Hampshire Medical Society be instructed to propose the following amendment to Chapter 1, Section 5 of the By-Laws: insert "and" in place of the comma after "years", insert "either" after the first "is" in line two, insert "or totally disabled" after "age", strike out "or who is an honorary member of his component society in an equivalent manner whereby he is relieved from the payment of dues," so that this section will read "Any physician who has been a member of this society for a continuous term of fifteen years, and who is either not less than sixty-five years of age or totally disabled, on the request of his county society may be made an affiliate member by a majority vote of the House of Delegates. Affiliate members shall be privileged to participate in the meetings of this Society but shall not be required to pay dues."

2 That a similar amendment to our by-laws be proposed

Accordingly, Mr. Speaker, I propose this amendment to the State Constitution and By-Laws

SPEAKER SANDERS This will be referred to the Committee on Constitution and By-Laws

Is there any further new business to come before the House of Delegates?

DR. GRAVES The complexity of the problems which have arisen makes me believe that the House of Delegates should authorize the appointment of a committee to have a certain amount of authority in dealing with the State Welfare Administrative Board Officials

DR. LORD In pursuance of Dr. Graves' idea, I would like to make this motion, that the Speaker of the House appoint three members of this Society to serve for one year as a Committee on State Medical Relief, whose function shall be to act with power for the New Hampshire Medical Society on matters concerning State Medical Relief

This motion was seconded by Dr. Wilkins. Upon vote, Dr. Lord's motion was unanimously passed.

DR. DEERING G. SMITH Mr. Speaker, because of the conflict in the By-Laws of the State Society where, in Section 5, it says, "The Trustees shall be the custodians of all funds belong-

ing to the society," and where, in Section 1, Chapter II of the By-Laws, it says that the "control, investing power (and so on) of the funds of the Benevolent Fund shall be in the hands of the Trustees, the President and Secretary-Treasurer", I propose the following amendment to Section 1, Chapter XI of the By-Laws, that the words "control, investing power, and" be stricken out of the second sentence, so that it will read, "The distribution of the income shall be vested in a Committee whose members shall consist of the Trustees of the Society, the President and the Secretary-Treasurer" Now, all that means is that the Benevolent Fund shall be under the control of the Trustees, as are all other funds of the Society

SPEAKER SANDERS This will be referred to the Committee on Constitution and By-Laws

DR SMITH I wish to give a partial report of the Committee on Officers' Reports

On the Report of the Secretary Treasurer, we wish to commend Dr Metcalf for the able manner in which he has carried on the work of Secretary Treasurer since the regrettable death of Dr Sullivan. We recommend the acceptance of this report and its incorporation into the Transactions of this Society.

We desire to call particular attention to the reference made to Dr Sullivan.

We recommend that the old records and annual reports of the society be housed in either the State Library or in the Library of the New Hampshire Historical Society, the choice to be made by the President and Secretary.

We do not believe it to be feasible at this time to establish a lecture bureau.

We recommend that the Constitution and By-Laws of this Society be published in booklet form, as soon as possible.

On the Report of the Committee on Amendments to the Constitution and By-Laws, we recommend the acceptance of this report and its incorporation into the Transactions of this Society.

We believe that each county society should adopt the model constitution and bylaws recommended by this Committee. We urge that each county society elect its delegates for a two-year term, and that at least one delegate be elected each year. We recommend that the State Secretary send a copy of the above model Constitution to each county secretary.

On the Report of the Committee on Mental and Social Hygiene, we recommend the acceptance of this report and its incorporation into the Transactions of this Society.

We recommend that the suggestions relating to the length of the parole of mental patients, clinics and children's ward be referred to the Committee on Public Relations, Public Policy and Legislation.

On the Report of the Committee on Scientific Work, we recommend the acceptance of this report and its incorporation into the Transactions of this Society.

We recommend that commendation be given to the members of this committee for the excellent program that they have prepared, and, for the efforts that they are making to have original papers presented by members of our Society.

On the following reports, Report of the Committee

on Publications, Report of the Necrologist, Report of Dr Parsons, relative to the State Library, Report of the Committee on Tuberculosis, Report of the Committee on Public Relations, Public Policy and Legislation, and Report of the Committee on Medical Liability Insurance, we recommend the acceptance of the reports and the incorporation into the Transactions of this Society.

We further recommend that the name of the Advisory Committee on Jurisprudence be changed to the Committee on Conciliation, and that the Chapter IX of the By-Laws be rewritten to conform with the ideas embodied in Section I of this report.

On the Report of the Committee on the Control of Cancer, we recommend the acceptance of this report and its incorporation into the Transactions of this Society.

We also recommend the continuance of this work and the appropriation of Fifty Dollars (\$50.00) asked for by the Committee.

On the Report of the New England Medical Council, we recommend the acceptance of this report and its incorporation into the Transactions of this Society.

Action on this matter has already been taken by the House of Delegates.

On the President's Report, we recommend the acceptance of this report and its incorporation into the Transactions of this Society.

We wish to thank Dr Graves for the tremendous amount of energy and time that he has spent in representing us in our relations with the Relief Administration.

We commend to the earnest consideration of the members of the Society the various subjects so ably discussed by the doctor in his report.

SPEAKER SANDERS You have heard a partial report of the Committee on Officers' Reports. Is there any motion regarding this partial report?

DR. WILKINS Mr Speaker, it appears that in that report there are no controversial subjects, and, in view of that fact, it seems to me unnecessary to vote on each recommendation separately.

I, therefore, move you, Mr Speaker, that all of the recommendations be accepted and adopted.

This motion was seconded and was carried.

SPEAKER SANDERS Has anybody anything to say about the New England Medical Council?

DR WILKINS I don't want to take up all the time, but I really feel that the New England Medical Council is an important institution, and we perhaps, as New Hampshire members of the profession, have a peculiar interest in it, because we were the ones who suggested this change and this contact with the other medical societies of the six New England states. I have sat in at a good many of the meetings, and I honestly believe that the Council accomplished something for the good of the medical profession of New Hampshire, perhaps not so much as we would hope, but I do believe that we ought not to allow it to die unless it dies with the

active coöperation of all the societies, too I would move you that this House of Delegates should indicate how they feel about it, and then the committee can act accordingly. I think it is sufficiently important for the members of the House of Delegates to act upon

SPEAKER SANDERS Dr Parker's recommendation is as follows "I would, therefore recommend that the New Hampshire Medical Society go on record as favoring the continuance of the New England Medical Council, under its present organization, and that meetings be held at no regular stated intervals, but at the call of the President and the Executive Committee when any problem or problems may arise which in their judgment, justify the expense of such a meeting, and that the expenses of such meetings be borne equally by the several states "

This motion was seconded and was carried

DR ROBINSON I move you, Mr Speaker, that we adjourn

This motion was seconded and was carried

SPEAKER SANDERS We will now adjourn until to-morrow morning at eight-thirty o'clock in this room

Adjourned, at nine-fifty-five o'clock in the evening

TUESDAY, MAY 15

The House of Delegates convened for its second meeting at the Hotel Carpenter, Manchester, New Hampshire, on Tuesday morning, May 15, 1934, at eight-thirty o'clock

The meeting was called to order by Dr Henry C Sanders, Jr, Vice Speaker

SPEAKER SANDERS There are twenty members present, which number constitutes a quorum

The next business is the reading of the minutes of the last meeting

DR WILKINS I move that the reading of the minutes of the last meeting be omitted

This motion was seconded and was carried

SPEAKER SANDERS The next business is the appointment of a Committee on Nominations. I will appoint on this Committee Dr Wilkins, Dr Hubbard, Dr Chesley, Dr Woodman and Dr Perley

I will also appoint the committee which was to be chosen to act on Medical Relief, the Advisory Committee to the Welfare Department, Dr Graves, Dr Bowler and Dr Clarence O Coburn

We have now, I think, some further reports, and at this time, I will call for a report of the

Committee on Communications and Memorials, and will ask Dr Parsons to give this report.

DR PARSONS We have a communication from Dr Chase. It is the understanding of the Committee that gold medals are presented only to physicians who have been members of this Society for fifty years. Dr Chase has been a member since 1907 only, and it is the opinion of the Committee that Dr Chase is not eligible for the medal

A copy of a resolution adopted by the Chicago Medical Society, opposing the exploitation of drugs, remedies and so forth over the radio, was read

The New Hampshire Medical Society is opposed to the advertising, recommending, or in any way exploiting over the radio any preparations, remedies, medicines or appliances for the treatment of human ailments

SPEAKER SANDERS You have heard the report of the Committee on Memorials and Communications. What action shall we take, gentlemen?

DR WILKINS Unless some one wishes to take them up serially, I move that the recommendations be adopted

It was so voted

SPEAKER SANDERS I believe the Committee on Officers' Reports has some further reports to make at this time, and I will call upon Dr D G Smith for these reports

DR DEERING G SMITH

On the report of the Committee on Scientific Work, we recommend the acceptance of this report and the incorporation in the minutes of the Transactions of this Society

On the Report of the Committee on Medical Liability Insurance we recommend the acceptance of this report and the incorporation in the minutes

We further recommend that the name of the Advisory Committee on Jurisprudence be changed to the Committee on Conciliation

We recommend that Chapter 9 of the By Laws be re-written in conformity with the ideas embodied in Section 1 of this report

On the report of the Committee for the Control of Cancer we recommend the acceptance of this report and its incorporation in the minutes of the Transactions of this Society. We also recommend the continuance of this work, and the appropriation of Fifty Dollars asked for by the Committee

On the report of the New England Medical Council we recommend the acceptance of this report. On this matter action has already been taken by the House of Delegates

On the President's report, we recommend the acceptance of the report, and the incorporation of it in the minutes. We wish to thank Dr Graves for the tremendous amount of energy and time that he has spent in representing us with relation to the Relief Administration. We commend to the earnest consideration of the members of this Society

the various subjects so ably discussed by Dr Graves in his report

SPEAKER SANDERS You have heard the report of the Committee on Officers' Reports Is there any discussion?

DR LORD I would like to make a motion to this effect, that the report of the Committee on Officers' Reports be adopted, with the exception of that recommendation with regard to the Committee on Medical Jurisprudence

This motion was seconded by Dr Harry O Chesley

SPEAKER SANDERS It has been moved and seconded that the report of the Committee on Officers' Reports be approved and adopted, with the exception of that section pertaining to the change of name of the Advisory Committee on Medical Jurisprudence

The motion was carried

DR METCALF Dr Blood is here this morning, and I think if we have ten or fifteen minutes, it would be well to hear him

DR BLOOD The subject which I wish to bring up is the question of maternity and infancy I think it is vitally important to the State of New Hampshire, in the first place, and equally important to the physicians now and in the near future My interest in the matter is largely due to the formation of the New England Obstetrical and Gynecological Society in which we should have many more members from New Hampshire than we have

As a result of my connection with that society, I have been interested in what we are doing in this state It is hardly necessary to call to your attention the fact that there is no committee or section in this Society which is doing anything special along this line

Eight thousand mothers gave birth in this State, according to statistics About five hundred physicians attend those mothers, and they are distributed, of course, as we know, all over the state Some of them are back in the rural areas, where the physician arrives late or not at all, and some of them are in the cities It is rather interesting that the mortality is rather greater in the cities than it is in the rural areas It is also rather interesting that there is a great variation in the figures between the different cities, one city as high as 785 and another as low as 202 in the year 1932 By counties, it varies very much, too

The death rate in the first year of the child is also very high The only thing that is being done for this is being done through the Board of Health

It is my thought that this could be brought

about by the same method that we have in other specialties, to have a committee appointed to take charge of this, and work with the State Board of Health, that controls the state appropriation on this question

I believe that we are too small to have a section on this, but the committee would be much worth while

Discussion on this subject was then entered into by Dr Metcalf, Dr Lord and Dr Rublee

DR GEORGE C RUBLEE I wish to make a motion, that a committee of three or five, as the Chair advises, headed by Dr Blood, be appointed as a Maternity and Infancy Committee

This motion was seconded and was carried

SPEAKER SANDERS On motion duly made and seconded, I will now declare this meeting adjourned, until eight-thirty o'clock to morrow morning, standard time

Adjourned

WEDNESDAY, MAY 16

The House of Delegates convened for its third meeting at the Hotel Carpenter, Manchester, New Hampshire, on Wednesday morning, May 16, 1934, at eight-thirty o'clock.

The meeting was called to order by Dr Henry C Sanders, Jr, Vice Speaker

SPEAKER SANDERS The first business of the meeting this morning is to listen to a report of the Committee on Nominations

DR WILKINS Mr Speaker, Your Committee has met and considered all the vacancies to be filled and submits the following report

For President,

Frederic P Lord,
Benjamin W Baker,
Chancey Adams

For Vice-President,

Clifton S Abbott,
Charles F Nutter
Richard E Wilder

For Secretary Treasurer, to fill out the remaining year in Dr Sullivan's term, Carleton R. Metcalf
For Councilor for Cheshire County, A A Pratte,
for five years

For Councilor for Sullivan County, Emery M Fitch

Both are reappointments
Trustee, for three years, Thomas W Luce
Speaker of the House of Delegates, Henry C Sanders, Jr
Vice-Speaker of the House of Delegates James B Woodman

Necrologist, Clarence E Dunbar
Delegate to the A. M. A. 1934-35, Deering G Smith.
Alternate delegate 1934-35 Emery M Fitch
Delegates to the State Societies to be appointed by the Secretary, as has been the custom in the last few years

Committee for Scientific Work, Carleton R Metcalf, Frederick P Scribner and Richard W Roblin son

Public Relations, Public Policy and Legislation, Samuel T Ladd, John Dill, Charles Duncan, the President and Secretary Treasurer Ex Officiis

Publications, Carleton R Metcalf Henry H Amsden and Warren Butterfield

Tuberculosis Robert B Kerr, R. M. Deming A L Wallace

Mental and Social Hygiene, Charles H Dolloff Benjamin W Baker and Charles A. Weaver

Control of Cancer George C Wilkins, George F Dwinell and Howard N Kingsford

Lay Health Organizations, one member for five years Robert B Kerr

Medical Education in Hospitals one member for three years, Robert J Graves

The new Committee on Maternity and Infancy work, Robert O Blood, Benjamin P Burpee and Chester F McGill

SPEAKER SANDERS There is a quorum present, and now we will proceed to the election of officers. The first officer to be elected and voted for is the President

DR PAUL DYE I move you, Mr Speaker, that one ballot be cast by the Secretary for Frederic P Lord for President

This motion was seconded and was carried

SPEAKER SANDERS Dr Frederic P Lord, having one vote cast by the Secretary, is declared duly elected as President of the Society for the ensuing year

The next office to be filled is that of Vice-President. Please prepare your ballots for Vice-President. I will appoint Dr Dye and Dr Dube as tellers to check the ballots

(Ballots were then cast)

DR DYE I would like to report that there was a unanimous vote for Dr Abbott, thirteen ballots

SPEAKER SANDERS Then I declare Clifton S Abbott duly elected as Vice-President of this Society for the ensuing year

Our next business is to elect a Secretary-Treasurer to succeed Dr Dennis E Sullivan for the unexpired term. Dr Carleton R Metcalf is the Committee's nominee

DR DYE Mr Speaker, I move that one vote be cast for Dr Metcalf for Secretary-Treasurer

This motion was seconded and was carried

SPEAKER SANDERS We are now ready to proceed with the election of other officers

DR ROBERT J GRAVES I move that the Secretary be instructed to cast one ballot for the whole ticket

This motion was seconded and was carried

DR METCALF The Secretary has cast one ballot for the whole ticket

DR SANDERS Under the heading of new business, I am going to ask Dr Ladd to supplement his report of the Committee on Public Policy and Legislation.

DR SAMUEL T LADD Mr Speaker and Members of the House of Delegates—This Committee has functioned ever since I have been a member of the Committee, and we have tried to accomplish something, but with a flat failure. I believe that the duties of this Committee are so vast that the suggestions that I personally have are these. That the entire medical profession of the State must see to it that the program that we lay out for the coming year should be taken up by the individuals of our society and thereby go to our respective legislatures before election. In other words, the New Hampshire Medical Society must do what our honorable President suggested in his annual address. There must be more activity on the part of the medical society and if they want to accomplish any of these projects that will come up before the General Court, it will be necessary to do something about it.

DR GRAVES I believe very firmly that we should have our legislative program, so far as possible outlined within the next two months, three at the latest. We have always, before this, waited practically until after the legislature meets and the bills are in, before much of anything was done.

DR SAMUEL T LADD If I am going to serve on this Committee I am going to ask each and every one of you fellows in the counties and in the towns to see to it, if we put on a program, that you have carried it to your respective candidates irrespective of party affiliations. In that way, you are going to accomplish something. Otherwise, you are going to drift haphazardly, as we have been going for the last twenty-five years.

SPEAKER SANDERS There is a report that has been submitted on the Amendment to the Constitution and By-Laws. This Committee reports on the proposed amendment of Monday night.

DR METCALF The Committee on Amendments to the Constitution and By-Laws recommends

(1) That Chapter 1 Section 5 of the By-Laws be amended by adding the words 'or totally disabled' after the word age and by striking out certain words so that the section will read, Any physician who has been a member of this Society for a continuous term of fifteen years and who is either not less than sixty-five years of age or totally disabled, on the request of his country society, may be made an affiliate member by a majority vote of the House of Delegates. Affiliate members shall have the same rights and privileges as other members of the Society, but shall not be required to pay dues.

(2) That Chapter XI, Section 1, of the By Laws be amended by striking out the words "control, investing power and" in the second sentence, so that the sentence will read, "The distribution of its income shall be vested in a committee whose members shall consist of the Trustees of the Society, the President and the Secretary Treasurer"

The above section refers to the Benevolence Fund

SPEAKER SANDERS What action do you want to take on this report of the Committee on Amendments to the Constitution?

DR KEELEY I move that the report of the Committee on Amendments to the Constitution and By-Laws be accepted and adopted

This motion was seconded and was carried

DR H O SMITH A further recommendation of the Committee on Amendments to the Constitution and By-Laws is as follows

We recommend that no change be made in Chapter IX of the By Laws, relating to the choice and duties of the Advisory Committee on Jurisprudence

SPEAKER SANDERS You have heard the report of this Committee on Amendments to the Constitution and By-Laws What action will the House take on this report?

DR WILKINS I move that it be accepted and adopted

This motion was seconded and was carried

DR SANDERS I wonder if you have anything to say with regard to Resolutions on Dr Sullivan's death, to be drafted on behalf of the Society, Dr Lord

DR LORD You rather caught me unawares It is something that I have spoken of to some of the men I had felt that it was customary in organizations of this type to go on formal record in such a case as Dr Sullivan's death I feel very much that those things seem empty, very often, but I feel that we should go on record officially and make a proper resolution to be expressed on our records and sent to the members of his family, over and above what has been done so well by our Secretary in his reports and by our President I would be glad to hear what the others have to say about it I hadn't formulated anything further

DR METCALF I think it would be a very nice thing to do, and very acceptable to the members of his family Dr Graves has already

written something on it, and I wonder if he would be willing to elaborate that

DR GRAVES Dr Amsden has written the best obituary I have ever seen, and I move you, sir, that the House of Delegates request Dr Amsden to prepare a proper memorial and resolution, to be spread upon our records and forward a copy to Dr Sullivan's family

This motion was seconded by Dr Wilkins and Dr Metcalf and was carried

DR METCALF I would move you, Mr Speaker, that the thanks of the New Hampshire Medical Society be extended to the Manchester Medical Society, to the guests, the State Board of Health, the exhibitors and all those who have contributed to the success of this meeting

This motion was seconded and was carried

SPEAKER SANDERS The next business is the selection of the place for the next annual convention.

DR LORD I would like to make a motion, subject to being condemned by this organization, that the meeting be held at Manchester Apparently, it is the most popular place for our meeting I would move also that the date be left to the discretion of the Secretary or the President

This motion was seconded and was carried

DR PAUL DYE I move you, Mr Speaker, that we adjourn

This motion was seconded and was carried.
Adjourned at ten o'clock in the morning

MISCELLANY

NEW MEMBERS

Pierre A. Boucher, Derry
Francis J C Dube, Nashua.
Christopher A. Mason, Greenfield
Paul C Marston, Freedom
Herbert B Messinger, Franklin
Joseph McCarthy, Concord
Henry W Perrin, Lisbon

DEATH

Harry H Boynton, Lisbon

OLD ELBOW INJURIES

Operations for Bony Block

BY FREDERIC JAY COTTON, M.D.†

IT is a matter of common experience that operations for cure of limitation of motion at the elbow are unsatisfactory. And such limitation of motion very often results from elbow fractures in adults to a distressing degree. In adults the problem is utterly different from that in children, in whom non-interference is the one best policy. After childhood one has nothing to hope from growth and adjustment, for time brings us nothing. And in many cases one hesitates to resort to the very useful operation of an arthroplasty, which involves at best some loss of power and stability.

The operations here described are among the very few that have proved really useful in cases demanding relief but not justifying arthroplasty. My knowledge of the two goes back to my army use of them in 1919. They are probably much older than that, but seem to be strangely little used.

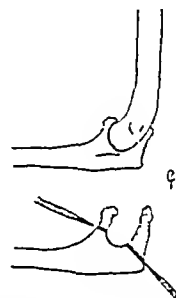
Many cases of bony block to flexion and extension, even where there is considerable deformity of joint surface, are directly due to contact of the olecranon or coronoid process on bone. Not uncommonly, even without other bony deformity from fracture old elbow injuries show well-marked enlargement of the coronoid with or without evidence of direct injury, an enlargement directly obstructing flexion.

Operation No 1 This is simply the removal of the coronoid tip and as much more as seems wise. The route of access is in front, down the line separating the biceps and the supinator longus, and carried thence into the forearm. The first thing to do is to locate the radial nerve in the upper end of the wound. Once identified it is rolled out of the way, outward with the muscle. In the floor of the wound, that is the lower end, is the radial head and neck with the biceps insertion. With the arm flexed a bit, the biceps tendon can be pulled forward, giving direct access to the coronoid. Only the insertion of the brachialis anticus needs clearing away a bit, and much or little of the coronoid can be removed. The nerves and vessels to the inner side are hardly within dangerous reach.

Operation No 2 consists in the shortening of the olecranon. This is far more often called for, both because limitation of extension is more important than that of flexion and because impingement of the olecranon seems much more often the deciding factor in a block, and is more

often definitely overgrown*. The operation is facilitated by the fact, which one forgets, that the triceps tendon is not attached to the end of the olecranon, but essentially at its tip. Between the olecranon and the triceps tendon lies a considerable bursal space usually continuous with the subtricipital pouch and the joint.

The route of approach is from the outer side, with a curved incision back of the condyle and exposure of the articular junction of the external condyle and olecranon. Then one must determine how much is to come away. A triangle as sketched is usually about right and this can



CORONOID AND OLECRANON

Upper figure Overgrown tips of coronoid and olecranon processes

Lower figure Shows direction of cuts and approximate levels at which both bones can be cut away without damage to the joint. The cut in the olecranon is above the triceps tendon insertion.

*Most of the back end of the olecranon is covered by a bursa.

be spared without damage to joint or tendon insertion. It is very desirable to cut this triangle clear in one continuous cutting across with a medium-sized thin osteotome without ragged surfaces. That is all there is to the operation. No vessels have been cut, and no muscle save some anconeus fibres. One or two deep approximation sutures are used followed by interrupted skin sutures and pressure dressing as usual.

There is one point most important because merely removing the olecranon tip is not enough. The joint must be brought out to full extension and much force may be required. One may feel, and hear, the giving way of periarticular adhesions. Moreover, early and rather vigorous active motion, but short of pain production, is needful to keep what one has gained.

CASES

CASE I J F aged 26 gas plant worker seen for Dr. W H Bennett, of Taunton June 13 1932. Accident suffered on January 5, 1932, when he was caught

*This overgrowth irrespective of direct trauma, seems a reactionary sort of thing. There is no arthritis accompanying it merely an accretion of osteochondritic growth. Not uncommonly it shows up in reduced luxations with no fracture.

†Cotton Frederic Jay—For record and address of author see page 51, issue of April 12 1934.

in a conveyor belt. The injury to the elbow was the only serious damage.

The head of the radius was excised and he had much physiotherapy following the operation. As first seen he had elbow flexion ten degrees beyond the right angle, with no rotation in pronation, and in supination twenty degrees. Extension was good for forty-five degrees short of the straight line. X-rays showed the coronoid process long, the olecranon was much overgrown and very evidently limiting the range of extension. Operation June 21, 1932.

Typical operation: resection of at least $\frac{3}{4}$ " of the olecranon. The arm came down to almost 180° on the table. Under exercises his rotation improved beyond expectation and he was at work with no disability after three months, and examination showed $\frac{1}{2}$ normal supination, near normal pronation, extension passively to full 180° , a little less, actively. But active extension to 180° was noted, December 3, 1932.

CASE II. G. F., hospital attendant aged 38 seen November 2, 1933 for Dr. C. P. Hutchins of Syracuse. Injured four months previously. The elbow was dislocated in handling a patient but not recognized or treated. He is a small but powerful man. The right elbow was locked at a right angle. X-ray study showed a slight outward displacement bringing the ridge of the sigmoid cavity external instead of internal to the ridge between the trochlear and capitellar surfaces.

This displacement of about $\frac{3}{8}$ " brought the coronoid and the olecranon processes opposite the deep portion of the external condyle. That locked the joint in flexion and extension absolutely. Motion in rotation was not limited. Sensory loss in the third and fourth fingers clearly showed some damage to the ulnar nerve.

After four months any operative replacement of the joint would have meant "taking it all to pieces" with marked chance of having it freeze up again all together. Arthroplasty was particularly unattractive as this man's job needed a strong as well as a mobile joint. It was decided to try what clearing the olecranon blockade would do.

Operation November 3, 1933. Syracuse Memorial Hospital with Dr. Richard Farr. "Transplantation" of the ulnar nerve to the front was done first and proved not easy owing to the unexpectedly massive fibrous infiltrate throughout the whole region.

Then through the usual external incision, the olecranon was shortened, liberally.

The subtricipital pouch ("bursa") was opened and some heavy adhesions divided. The elbow was

then extended with cracking of heavy adhesions somewhere nearly 180° degrees, and flexion became practically normal. The joint motion was smooth with no jerks. Two days later there was no reaction, save a slight increase in anesthesia of the last two fingers, due to nerve handling. November 17, 1933 he was reported as soundly healed with motion in flexion 10 degrees beyond a right angle and extension through 30 degrees, to 120 degrees, with a range of 40 degrees a fortnight after operation, with exercises barely begun.

January 22, 1934 this man returned to full duty. Flexion to 60 degrees, extension to 147 degrees, pronation 80 degrees, supination 70 degrees. Slight ulnar hypoesthesia, persisted to that date.

CASE III. A. R., aged 30, a roofer, seen April 10 1933. Injury of August 19, 1931. He fell from staging sustaining compression fracture of the spine, and various other injuries. The remaining disability is of the right elbow only. He is a well-made muscular man. There is 50 degrees limitation of flexion. A fracture of the radial head does not now limit rotation. X-ray shows coronoid overgrown, but not impinging. The olecranon was overgrown, and in a film taken in a maximum extension the solid impact of the long olecranon tip in the olecranon fossa is unmistakable.

Operation Salem Hospital, October 8, 1933. A large wedge of the olecranon removed in the usual way. On manipulation after the operation the arm came out to full 180° degrees extension. Owing to delay in instituting exercises, extension was slow in returning, but January 24, 1934 he showed nearly full extension (15 degrees short) and in the x-ray only the regular partial reproduction of the excised bone. He is now ready for work.

CASE IV—(Inserted for contrast). J. O. B. aged 30, painter, seen October 27, 1933 for Dr. C. W. Harrison. The lesions were an injured spine and left wrist and left elbow in a fall of 30 feet, September 9, 1933. Essential disability was limited to elbow. No rotation, flexion to a little better than a right angle, extension fifty degrees short of the straight line. Preparations for removal of radial head and the typical olecranon wedge removal were made. The olecranon was definitely overgrown. At operation, November 10, 1933, the removal of the radial head completely cleared both rotation and extension so that there was no need of touching the olecranon. So the question of location of the block is not always easy. December 1, 1933. The patient has practically complete extension, and good rotation.

MORTALITY RATES

Telegraphic returns from 86 cities, with a total population of thirty-seven millions, for the week ending May 19 indicate a mortality rate of 11.3 as against a rate of 10.6 for the corresponding week of last year. The highest rate (21.5) appears for Wilmington, Del. and the lowest (5.3) for Flint, Mich. The highest infant mortality rate (25.1) appears for San Antonio, Texas and the lowest for Des Moines, Iowa. Erie Pa., Louisville, Ky., Lowell, Mass., Lynn, Mass., New Bedford, Mass., Oklahoma City, Oklahoma, Paterson, N. J., Salt Lake City, Utah and Yonkers, N. Y., which reported no infant mortality.

The annual rate for 86 cities is 12.4 for the twenty

weeks of 1934 as against a rate of 11.8 for the corresponding period of the previous year.

SUMMARY OF DEATHS AND DEATH RATES (ANNUAL BASIS) FROM AUTOMOBILE ACCIDENTS PER 100,000 ESTIMATED POPULATION FOR 86 CITIES FOR CORRESPONDING PERIODS OF 1934 AND 1933

	Week ending		First 20 weeks	
	May 19, 1934	May 20, 1933	1934	1933
Total deaths —	152	135	3,128	2,759
Death rate —	21.2	18.8	21.8	19.2
Deaths due to accidents in city —	119	105	2,544	2,224
Death rate —	16.6	14.6	17.7	15.5

—Bureau of the Census

CASE RECORDS of the MASSACHUSETTS GENERAL HOSPITAL

ANTE MORTEM AND POST MORTEM RECORDS AS USED
IN WEEKLY CLINICAL PATHOLOGIC EXERCISES

EDITED BY RICHARD C CABOT, M D
F M FAIVIER, A B, ASSISTANT EDITOR

CASE 20241

PRESENTATION OF CASE

First admission A thirty-one year old American, a department manager in a paper box factory, entered for the first time a year before his final admission

Twenty-one months before admission the patient's mother noticed a slight swelling in the right side of his neck. He felt perfectly well at the time. From that time the swelling grew steadily larger except during two periods, the first four months before entry, when it became larger for a few days and then dropped to its usual size, and again a week and a half before entry, when it decreased in size, remaining small until admission. The swelling was always soft, painless, and never inflamed. He was forced to wear larger collars, changing them as the swelling grew. He had no hoarseness or difficulty in swallowing or breathing, and no other swellings elsewhere in his body. One month before admission he had a two week period of headaches localized between the temples and about the top of the head. These headaches were aggravated by noise, confusion, or any disagreeable incident. They were not present for the two weeks immediately before admission.

The family and marital histories are irrelevant. Twenty-one years before entry he broke his nose and since then had had some obstruction in his right nostril. Five years before entry while leaning over to pick up some papers he felt an agonizing pain in his right hip on standing up. This apparent back strain troubled him for about seven weeks, and since then his back had been weak. During the past ten days he had had a recurrence of this soreness in the right hip. He was slightly deaf in his left ear.

Physical examination showed a well nourished man apparently in good health except for a large lump in the right side of his neck. The right pupil was slightly smaller than the left. The right nostril was obstructed by a deviated septum. The teeth were ill kept and carious. The trachea and larynx were displaced to the left by a mass larger than a fist extending from the supraclavicular fossa to the parotid region and from the midline in front to the postauricular region behind on the right side of the neck.

There were firm, elastic, discrete, easily palpable masses from the size of a bean to that of a chestnut surrounding the larger mass. There were no other enlarged glands. The liver and spleen were not palpable. There was a two or three millimeter erosion on the anterior aspect of the scrotum. This had been present for approximately six weeks. The heart and lungs were negative. The blood pressure was 110/70 on the right side and 110/60 on the left.

The temperature was 99.6°, the pulse 90, the respiration 22.

Examination of the urine was negative. The blood showed a red cell count of 4,900,000, a hemoglobin of 80 per cent, a white cell count of 7,700, with 87 per cent polymorphonuclears, 1 per cent lymphocytes, 5 per cent large mononuclears, 2 per cent young polymorphonuclears. The platelets were normal in number. Examination of the stools was negative. The Hinton test was negative. The basal metabolic rate was plus 17.

X-ray examination of the chest showed clear lung fields except for an area of dullness involving the extreme right apex, interpreted as an overlying soft tissue mass, plainly visible in the neck.

The visiting man on service found in addition a slight pulse difference between the right and left sides, a palpable liver and spleen, and increased supracardiac dullness. Another white blood cell count six days after admission was 4,600, with a differential of 59 per cent polymorphonuclears, 29 per cent lymphocytes, 4 per cent large mononuclears, 7 per cent eosinophils and 1 per cent basophils.

A biopsy of one of the cervical glands was reported as lymphoblastoma, Hodgkin's type. X-ray treatment was begun. The patient was discharged on the twelfth day, to be followed in the X-ray Treatment Clinic.

History of interval Following an x-ray treatment after his discharge the swelling in his neck subsided, and for the next year he felt quite well. Eleven days before his second entry while walking beside a truck he suddenly turned his head for some reason and bumped it on the edge of the truck. He was stunned, but did not lose consciousness. The site of the injury was in the upper and front part of the temporal region. There was considerable localized edema and redness. Three hours after the accident he developed a generalized headache which gradually increased in severity and continued until admission. It was aggravated by any motion, interfered with his sleep, and was not relieved by pyramidon. The day before admission he entered the Emergency Ward. Skull films showed no evidence of fracture. The suture appeared quite widely separated and it seemed probable that the intracranial pressure was increased.

Second admission, a year after his previous discharge

Physical examination showed a well nourished man apparently in excellent health. There was slight stiffness and pain upon bending the neck. In both sides of the neck were many discrete soft non-tender glands from 5 to 15 centimeters in diameter. The spleen was palpable about one fingerbreadth down and upon deep inspiration the edge was sharp and firm. A complete neurologic examination was negative except for very severe headache.

The temperature was 103°, the pulse 110, the respiration 23. The blood pressure was 120/76.

Examination of the urine was negative. The blood showed a red cell count of 3,200,000, a hemoglobin of 70 per cent, a white cell count of 3,100, 86 per cent polymorphonuclears, 10 per cent lymphocytes, 4 per cent large mononuclears.

A lumbar puncture done in the Emergency Ward on the day before admission to the Neurological ward showed an initial pressure of 325. Pressure upon the jugulars showed no block. The spinal fluid was clear, colorless, and did not clot upon standing. The cell count showed 320 small round cells taken to be red cells. Some of them however had a small knob on one end suggesting that they might have been yeast cells. There were 28 white cells, 17 per cent lymphocytes. The total protein was 43, the sugar 316, the chlorides 708. Another lumbar puncture showed that these peculiar cells in the spinal fluid were definitely yeast cells and showed budding forms. A culture of the spinal fluid showed a good growth of yeast.

He continued to have spinal taps, each showing an increased cell count and yeast organisms. At one puncture 75 to 90 cubic centimeters of spinal fluid was removed over a period of two and a half hours. One-half normal saline was given intravenously. After eighty ounces of the fluid had been injected the headaches stopped. His temperature remained elevated and at times was picket fence in character, reaching as high as 104.5°. At admission he was irrational. On the forty-seventh day he developed bronchial breathing in the right chest. On the following day rales were heard all over the chest. The temperature was 103°. He gradually failed, became much weaker, and died approximately ten weeks after admission.

CLINICAL DISCUSSION

DR GEORGE W HOLMES. We have a long series of films on this patient, none of which is very interesting. The first observation was at the time of the first admission. I think you can see the large soft tissue mass in his neck and the area of dullness at the right apex which we interpreted as being due to pressure of the apex down from the mass in the neck. The glands in that region are not due to tuberculosis.

Then a series of films taken after treatment shows a disappearance of the mass in the soft tissues of the neck but not a complete disappearance of the shadow in the upper mediastinum and region of the apex. There are still no changes in the lung.

Then we have a slight increase in this shadow and a little later some disappearance in the shadow. It looks as if there was active disease in the glands in that region at that time.

The last film was taken three months before death. At that time there was still some widening of the upper mediastinum without any recurrence of the mass in the neck.

The skull films showed the characteristic blood vessel markings. The suture was not closed. In some of the films an area of diminished density is seen at this point. Another film shows a similar area at a different point. I do not know just how to interpret those. They may mean nothing, or they may mean localized areas of infiltration of lymphoma in the bone. They are not however characteristic.

A plate of the gastro-intestinal tract was negative.

DR JAMES B AYER. I have nothing to add, but I am interested in this relationship between yeast infection and lymphoblastoma. We certainly have yeast infection without lymphoblastoma, but the occurrence of the combination seems to be increasing. Is there anything in the pathologic field that correlates the two?

DR TRACY B MALLORY. No causal relationship has been proved. There are a number of scattered case reports and the combination has been very frequently observed.

DR FRANCIS T HUNTER. I might take this opportunity to protest about the usual dietetic description of lumps in the neck and various parts of the body. These are usually described as the size of a bean, and you cannot tell what kind of bean. It may be anything from a black eyed soy bean to a Mexican jumping bean. I think it is a pretty slovenly description. It is just as easy to say a centimeter or two, or something you can prove in court.

DR J H MEANS. There was an editorial on that in the New England Journal of Medicine or the American Medical Journal, we posted it on the bulletin board. I do not think that either that or Dr Hunter's complaint will alter the practice of comparing things to potatoes or anything else.

CLINICAL DIAGNOSES

Torula cerebrospinal meningitis
Lymphoblastoma

ANATOMIC DIAGNOSES

Torula meningitis with metastases to the kidney, adrenal and lungs
Lymphoblastoma, Hodgkin's type, involving spleen, bronchial and retroperitoneal glands

Acute bronchitis.
Pulmonary edema
Endocarditis, acute terminal, mitral
Otitis media, left

PATHOLOGIC DISCUSSION

DR. MALLORY The progress of science is shown by the fact that these small round bodies that looked like red cells were promptly recognized as yeast. The first case of torula meningitis in this hospital went totally unrecognized for a matter of days, during which counts of two, three and four thousand red cells were put down day after day in the record. I have forgotten whether the second was as promptly recognized as this one or not. The spinal fluid sometimes contains simply extraordinary numbers of yeast cells and there may be very little in the way of cellular reaction to them. That is borne out by the pathology in the brain in some of these cases. In our first case it was most striking. The entire brain presented a moth eaten appearance. There were great holes throughout the brain substance everywhere and in these holes nothing but masses of yeast without a sign of cellular reaction to them. To some degree that may have been postmortem overgrowth, but I feel fairly certain it could not have been entirely that, and the paucity of reaction is rather striking in many cases.

This happens to be the fifth case that I have seen of coincident torula infection and some form of lymphoblastoma. Four out of the five have been typical Hodgkin's disease. The fifth I saw the section from, prepared at the Mayo Clinic, and that undoubtedly was lymphosarcoma, not Hodgkin's, so that one can get it in either type. I had a chance two years ago to see a manuscript which so far as I know was not published, collecting some eighty odd cases of torula infection, and there were about a dozen in which torula and Hodgkin's were found together, so the coincidence is much too striking to be purely a matter of chance. It is not so close as the coincidence of tuberculosis and Hodgkin's, but it certainly approaches it.

In this man we found torula in two other spots besides the meninges. His adrenals contained several tiny little cysts and those are filled with yeast organisms practically without reaction. Scattered throughout his lung are milary lesions about the size of milary tubercles consisting of accumulations of monocytes, and in many of these are yeast cells.

The question of the portal of entry has never been settled and often nothing has been found at autopsy to suggest one. In this case with a lung infection it would seem possible that the lung was primary. On the other hand the distribution is so much like that of milary tuberculosis that it is quite possible that the lung is secondary.

It is interesting that in one of the other two

cases we had in the hospital lesions were also found in the adrenal.

DR. HOLMES Did you examine the skull?
DR. MALLORY I have no note on that, Dr. Holmes

CASE 20242

PRESENTATION OF CASE

A thirty year old unemployed American Negro saxophone player entered complaining of weakness and fever of six months' duration.

Approximately four years before entry the patient noticed a painless, colorless swelling under his left arm which gradually increased to the size of a hen's egg in a period of about one year. A short time after the appearance of the swelling he began to have frequent night sweats, fever, and occasional chills. He had no cough or hemoptysis. He lost some weight, but was able to continue his work as a saxophone player. There were no other swellings. Three years before admission he entered a New York hospital, where he remained for three and a half months, during which time he had a biopsy and x-ray treatment. He was discharged against advice. While in that hospital he was up and about, but had intermittent fever. The febrile cycles were about ten days at first and later lasted for about three weeks. According to the patient the biopsy report was Hodgkin's disease. The x-ray treatment that he received in New York was given to the left axilla, the abdomen and the back. For the next two years he lived at home, usually up and about, but at times he would have chills, fever and drenching night sweats. His appetite was good and he maintained his weight at 130 pounds. There was no diarrhea. He did not have steady work, but at times played the saxophone at a dance. Six months before entry he began to feel more tired and weak, and for the past two weeks had remained in bed. He had no chills, but he usually felt feverish and had frequent drenching night sweats. No swelling appeared. He became short of breath very easily. There was no cough, sputum or hemoptysis. Since his discharge from the New York hospital he had received no special treatment and no x-ray treatment.

His family and past histories are irrelevant.

Physical examination showed a well developed but cachectic colored man. There were a few small cervical glands. In the right axilla was a large firm non-tender gland two by two centimeters. There were occasional râles at the bases and bronchophony posteriorly over the scapular spaces. The heart was at the upper limits of normal in size. There was a blowing systolic murmur over the whole precordium and an early blowing diastolic murmur at the third left interspace. The blood pressure was 100/40. The pulse was collapsing in type. There was capil-

lary pulse and a positive Duroziez's sign. The abdomen was slightly distended. The spleen was felt two or three fingerbreadths down.

The temperature was 103.1°, the pulse 120, the respiration 36.

Examination of the urine showed a specific gravity of 1.018, a trace of albumin and an occasional hyalin cast. The blood showed a red cell count of 1,010,000, a hemoglobin of 20 per cent, a white cell count of 6,400, with 71 per cent polymorphonuclears. On smear most of the polymorphonuclears were young. The red cells showed marked achromia. Six normoblasts were seen. Examination of the stools was negative. A Hinton test was negative. A blood culture was negative.

Upon admission the patient was given a transfusion, following which the aortic diastolic murmur was inaudible. He became irrational. Four days later he was given another transfusion with a similar reaction. On the eleventh day a biopsy of the left axillary gland showed lymphoblastoma, Hodgkin's type. He failed very rapidly and died on the fourteenth day.

CLINICAL DIAGNOSIS

Hodgkin's disease

ANATOMIC DIAGNOSES

Hodgkin's disease involving the axillary, tracheal, retroperitoneal and mesenteric lymph nodes and the spleen

Acute miliary tuberculosis of the lungs, liver and kidney

Pulmonary tuberculosis, healed, left apex

Tuberculosis of tracheobronchial nodes, healed

Hypertrophy of the right kidney

Hydrothorax, bilateral

Ascites

Biopsy wound of left axilla

Appendectomy, healed

PATHOLOGIC DISCUSSION

DR TRACY B. MALLORY. The diagnosis of most cases of Hodgkin's disease of course is entirely unsettled until one has a biopsy and completely obvious afterwards, so that there is very little point in attempting differential diagnosis.

One point of interest, however, is why cases of Hodgkin's die and what they die of. It was for that reason that I picked out this case today. There was nothing in the clinical history to give anyone any lead and there was nothing peculiar noticed in gross at the autopsy either. When the microscopic sections came through, however, it was quite evident that we had two lesions side by side in many places and so intimately intermingled that in places no one could tell which was which. In all probability, however, Hodgkin's disease was not the immediate

cause of his death, but a fulminating miliary tuberculosis.

The only significant old focus of tuberculosis that we found was in his tracheal and bronchial glands.

The frequency with which tuberculosis and Hodgkin's occur in the same case of course has always been commented upon, but it has never been clear how to evaluate the association. If one looks hard enough for tuberculosis in the autopsy of any person above the age of twenty-five one can almost invariably find it. So that since this search for tuberculosis has been conducted with great enthusiasm I think it is not at all surprising that nearly invariably it is found in cases of Hodgkin's. On the other hand the number of cases in which acute tuberculosis is present is relatively much less striking. This is the second one in five years in the autopsy series here at the Massachusetts General Hospital.

The question always comes up as to whether x-ray treatment may or may not have influenced these cases unfavorably and possibly have caused the tuberculosis to progress more rapidly. How do you feel about that, Dr. Holmes?

DR GEORGE W. HOLMES. I should have said that the combination of tuberculosis and Hodgkin's is more common than you have stated it to be.

DR MALLORY. You think a significant degree of tuberculosis?

DR HOLMES. In the cases of Hodgkin's that do not do well under treatment we have found several that had evidence of tuberculosis, and I should think you would see more than you have.

DR MALLORY. One can get in pure Hodgkin's disease almost complete duplication of every picture one sees with tuberculosis, so that it might be hard to differentiate radiologically.

DR HOLMES. As to the effect of radiation on tuberculosis, I think with large doses one may cause tuberculous foci to light up, but the doses we generally use in Hodgkin's are not large enough to do that. In some cases that do not respond to the usual dose, a large dose may be given with breaking down of the glands. I am quite certain there are cases in which the glands have broken down and miliary tuberculosis has developed as a result. The possibility is well worth considering.

DR CHESTER M. JONES. How commonly do you see hepatic lesions in tuberculosis? It has struck me that they are very rarely reported here. I have talked with a man from Saranac who said it is very common. We see very little relatively, but as one reads in the textbooks it appears to be a very common finding. It seems to me it is uncommon in a general hospital.

DR MALLORY. If you have a terminal miliary tuberculosis the liver is almost always involved. A fair percentage of tuberculosis cases wind up with a miliary process, but aside from that I have never seen it here.

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Journal of Medicine

SUCCESSOR TO

THE BOSTON MEDICAL AND SURGICAL JOURNAL

Established in 1828

Published by THE MASSACHUSETTS MEDICAL SOCIETY
under the jurisdiction of the

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for the United States Canada \$7.00 per year \$5.50 per year
for all foreign countries belonging to the Postal UnionMaterial for early publication should be received not later
than noon on Saturday. Orders for reprints must be sent to
the Journal office 8 The Fenway.The Journal does not hold itself responsible for statements
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Journal of Medicine 8 The Fenway Boston, Mass.THE MODERN TREATMENT OF
NEUROSYPHILIS

THE Annual Report of the Trustees of the Boston Psychopathic Hospital for 1933, in addition to giving a summary of the work of the hospital, which is of the highest character, also presents an important review of the treatment of neurosyphilis under the direction of Dr. Harry C. Solomon, Chief of the Department of Therapeutic Research. Treatment of syphilis of the central nervous system was started in this hospital in 1913 and it is interesting to recall with Dr. Solomon the various stages of the changes in therapeutics of neurosyphilis in the last twenty years.

The original work was stimulated by Swift and Ellis, who, in 1912, introduced intraspinal treatment with salvarsanized serum. Salvarsan had been brought to this country a few years before, and in the interval it was learned that this medication, so efficient against primary and secondary syphilis, was not especially efficacious in the treatment of general paresis and was

only valuable in a limited number of cases of tabes dorsalis. The type of treatment introduced by Swift and Ellis was used at the Psychopathic Hospital for about two years with what seemed to be a modicum of success. After an interruption by the War, this method was again taken up with the addition of arsphenamine to the serum and various other modifications. It was found that this method was successful in the treatment of cases of neurovascular syphilis and tabes dorsalis, but the effect on general paresis was not what one desired. Good results from the clinical standpoint were obtained in only ten per cent, with serological improvement in an even smaller percentage. The chief reason it was felt, for the failure of this type of treatment was that the serum did not reach the portion of the brain involved in the parietic disorder. In 1919 the Aver method of intrasternal puncture was invented and the introduction of intracasternal serum was taken up with enthusiasm. The rate of improvement by this method was about twice that of the old method and the serological results were also much better.

There was always, however, a search for improved methods and in 1923 one was found in a new arsenical preparation originated at the Rockefeller Institute called tryparsamide. This drug given intravenously proved to be markedly superior to the methods already mentioned and ultimately the use of tryparsamide, supplemented by arsphenamine bismuth and mercury, almost entirely replaced the other forms of treatment.

Within two years, however, namely in 1925, another and even more important method was introduced into the clinic. This was the treatment by inoculation malaria. It was found, moreover, that the combination of malaria and tryparsamide in some cases gave better results than either of these methods used independently. For a time in the search for a substitute, sodoku, or rat-bite fever, was tried. This was not found more satisfactory than malaria and has been discontinued. Lastly in 1931, diathermy and radiotherapy were added as a means of producing fever, to supplant that produced by malaria. It is too early to judge in regard to the value of this method.

Finally, Dr. Solomon summarizes the present treatment given to patients seen in his clinic. First he uses drugs, the main reliance being put upon tryparsamide, but with the use also of arsphenamine, bismuth and mercury, secondly, febrile treatment, using for this purpose malaria, typhoid vaccine, diathermy and the electric blanket. A combination of the above methods seems to give the best results and certainly improvement is now expected in well over fifty per cent of the cases, as compared with ten per cent twenty years ago.

The clinic has not been unmindful moreover,

of the families of these patients. Proper attention has been paid to the husbands or wives and the children of syphilitic parents. It is interesting to know that a new book is being prepared by the clinic, giving in detail the results of twenty years of study of this subject.

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COTTON, FREDERIC JAY, M.D. See page 817, issue of April 12 for record of author His subject is "Old Elbow Injuries Operations for Bony Block." Page 1289

MASSACHUSETTS LEGISLATIVE NOTES

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One may question as to whether any convict may purchase freedom in this or any other way. If executive clemency is to be exercised, may not evidence of reformation of the convict's character be the deciding test? Even granting the importance of this contribution to medicine, is it reasonable to return to society a menace to human welfare? A person who has been made resistant to the tubercle bacillus may still be one of unsocial tendencies.

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NILES—JOHN OTIS GARFIELD NILES, M.D., of Everett, Massachusetts, born in 1880, died while swimming near his summer home on Plum Island, June 5. It is supposed that he suffered a heart attack. He was educated in the schools of Somerville, and the Cambridge Latin School. He graduated from Harvard College and in 1914, from Harvard Medical School. Dr. Niles practiced successfully in Everett, and had served as city physician. He was a Fellow of the Massachusetts Medical Society, and the American Medical Association, a member of the Harvard Club, and was an accomplished musician. He is survived by his widow, Mrs. Annie Louise

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Lawrence Mass,
June 6, 1934

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Dear Doctor

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This service is gratis Your attendance at the Clinic is always welcome

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REPORTS AND NOTICES OF MEETINGS

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The use of pneumococcus serum for the treatment of lobar pneumonia will remain in the hands of a group of physicians fully acquainted with the technique of administration. At present it is of value only in Type I and Type II lobar pneumonia and must be used within the first four days of the disease It must still be considered an experimental therapeutic agent. The Commonwealth or Harkness fund finances this work, at a cost of seventy five to eighty dollars per patient, whereas the serum purchased from a private firm would cost between two and three hundred dollars

Measles mortality has fallen to 0.16 per cent, perhaps because of better home care Dr McKhann of the Children's Hospital in Boston has shown that placental extract contains a substance that will give a passive immunity to an exposed child if administered within five days after exposure After the seventh day it will modify the measles and produce a mild abortive attack The latter procedure is the choice in children over six years of age as completely preventing the disease leaves the child susceptible to subsequent infection

CLUTE, HOWARD M BSc, MD Dartmouth Medical School 1914 F.A.C.S Surgeon, Lahey Clinic Assistant Surgeon, New England Deaconess and New England Baptist Hospitals Address 605 Commonwealth Avenue, Boston, Massachusetts Associated with him is

SWINTON, NEIL W MD University of Michigan Medical School 1929 Surgical Fellow, Lahey Clinic Address 605 Commonwealth Avenue, Boston, Massachusetts Their subject is "The Diagnosis and Management of Obstructive Jaundice" Page 1265

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Temporary immunity to scarlet fever may be obtained with convalescent serum which, however, is too expensive for general use. Active immunization with toxoid is still in an experimental stage but has been found efficacious in controlling outbreaks in several institutions. No case of smallpox has been reported in the state for the past two years.

The decreased incidence of typhoid fever is one of the triumphs of sanitation and preventive medicine. While the water supply in several parts of the state is still not ideal, the great majority of recent cases have been traced to typhoid carriers. With the decrease in cases there will be fewer carriers and a further reduction in typhoid morbidity may be expected.

Tuberculosis remains the most important infectious disease and both for the sake of the patient and the community early diagnosis is imperative. This is often difficult by any physical examination, especially so in children, and in all suspicious cases an x-ray examination of the chest is indicated. Approximately one out of every 100 with a positive von Pirquet test can be shown to have pulmonary tuberculosis. The possibility of an undiagnosed adult case in the household as a source of infection of the child is very great.

ALUMNI ASSOCIATION OF BOSTON UNIVERSITY SCHOOL OF MEDICINE

At the annual meeting of the Alumni of the Boston University School of Medicine, Dr. Harold L. Babcock was elected president, Dr. Helmuth Ulrich vice-president, Dr. Louis C. Howard, second vice president, Dr. Rudolph Jacoby, secretary, and Dr. Harold W. Ripley, treasurer.

Speakers at the dinner, which was a feature of the occasion, included Dr. Harold L. Leland, Dr. Alexander S. Begg, dean of the school, Dr. H. L. Babcock, and Dr. Daniel L. Marsh, president of Boston University.

NEW ENGLAND SURGICAL SOCIETY

The 1934 Meeting of the New England Surgical Society will be held at Burlington, Vermont, Friday and Saturday, September 28 and 29.

JOHN M. BIRNIE, M.D., Secretary

FIRST INTERNATIONAL CONGRESS OF ELECTRO-RADIO-BIOLOGY

The International Society of Radio-Biology announces that His Excellency Benito Mussolini on account of the favorable advice of the National Council of Research, approved the initiative to call an International Congress of Electro-Radio-Biology. This First International Congress of Electro-Radio-Biology will take place from September 10-15, 1934, in the Doges Palace at Venice.

The Congress will be presided over by His Excellency the Marquis Guglielmo Marconi, President of the Royal Academy of Italy, President of the Na-

tional Council of Research, State-Senator and by His Excellency, Count Giuseppe Volpi di Misurata, State-Minister, State-Senator.

The object of this Congress is to invite for a discussion Physicists, Chemists, Biologists, Naturalists, and Physicians, on biological actions of all radiations, in order to coordinate the respective investigations.

The biologist will learn from the physicist the theoretic and experimental basis of the physical researches on the vibratory and corpuscular phenomena. The physicist and the physico-chemist will learn from the biologist what are the influences that these phenomena have on cellular elements, complex tissues and on organic processes.

Moreover, the organizers of the congress hope to determine a new radio-biological tendency of many present physical and biological investigations.

The Congress intends to study the chemical and biological phenomena in respect to radiations.

For further information the request may be made to the General Secretary of the Congress, Dr. Glorindo Protti, S. Gregorio 173, Venice (Italy).

SOCIETY MEETINGS, CONGRESSES AND CONFERENCES

June 19—Lawrence Cancer Clinic. See page 1299.

July 24-31—The IVth International Congress of Radiology will be held in Zurich under the presidency of Professor H. R. Schnitz. General Secretary Dr. H. E. Walther, Gloriastrasse 14, Zurich.

August 18-September 30—Medical Study Trip to Hungary. See page 975. Issue of May 10.

September 3-6—American Public Health Association, at Pasadena, California. Dr. J. D. Dunshee, Chairman. Local Committee on Arrangements.

September 4, 5-6—International Union Against Tuberculosis. For information address the National Tuberculosis Association, 450 Seventh Avenue, New York City.

September 10, 11, 12, and 13—American Congress on Physical Therapy will meet in Philadelphia at the Bellevue Stratford. For details write American Congress of Physical Therapy, 30 North Michigan Avenue, Chicago, Illinois.

September 10-15—First International Congress of Electro-Radio-Biology. See notice elsewhere on this page.

September 28-29—New England Surgical Society. See notice elsewhere on this page.

October 22-November 2—1934 Graduate Fortnight of the New York Academy of Medicine. See page 1240. Issue of June 7.

October 31-November 2—Massachusetts State Nurses Association Hotel Statler, Boston. For information write Miss Helene G. Lee, R.N., 420 Boylston Street, Boston.

BOOKS RECEIVED FOR REVIEW

Corrective Physical Education. By Josephine Langworthy Rathbone. 292 pp. Philadelphia: W. B. Saunders Company. \$2.50.

L'Eczéma du Nourrisson. Par les docteurs M. Péhu et R. Anagnier. 174 pp. Paris: Gauthier Villars, Editeur, 1934. 25 fr.

Urinary Analysis and Diagnosis. By microscopical and chemical examination. By Louis Heitzmann. Sixth Revised Edition. 385 pp. Baltimore: William Wood and Company. \$5.00.

The Principles of Gynecology. A textbook for students and practitioners. By William Blair Bell. Fourth Edition. 848 pp. Baltimore: William Wood and Company. \$10.00.

Genealogy of Sex. Sex in its myriad forms, from the one-celled animal to the human being. By Curt Thesing. Translated from the German by Eden and Cedar Paul. 320 pp. New York: Emerson Books Inc. \$5.00

New and Nonofficial Remedies, 1933. Containing descriptions of the articles which stand accepted by the Council on Pharmacy and Chemistry of the American Medical Association on January 1, 1933. 510 pp. Chicago: American Medical Association Press. \$1.50

Diseases Peculiar to Civilized Man. Clinical management and surgical treatment. By George Crlie. Edited by Amy Rowland. 427 pp. New York: The Macmillan Company, 1934. \$5.00

Obstetric Medicine. The diagnosis and management of the commoner diseases in relation to pregnancy. Edited by Fred L. Adair and Edward J. Stieglitz. 743 pp. Philadelphia: Lea & Febiger. \$8.00

The Chemistry of the Hormones. By Benjamin Harrow and Carl P. Sherwin. 227 pp. Baltimore: The Williams & Wilkins Company. \$2.50

BOOK REVIEWS

Hypertension and Nephritis. By Arthur M. Fishberg. Third Edition thoroughly revised. 668 pp. Philadelphia: Lea & Febiger. \$6.50

This book maintains its place in the field of medicine as the most complete work offered to the profession. It is a reference book, a practical manual, a summary of present day ideas of hypertension and nephritis, and best of all it is something which can be used by anyone interested in this field.

The tests for kidney function are described clearly. There are five tests given to determine concentration and dilution, the whys and wherefores are stated definitely.

The sections on Uremia, Hypertension, Arteriosclerosis, and Essential Hypertension are well done. The psychical aspect of chronic disease is presented in a most understanding way, and particularly so in Essential Hypertension.

This book is one to be owned and not lent. It is an outstanding work of first quality presenting Hypertension and Nephritis thoroughly and practically.

Japanese Medicine. By Y. Fujikawa. Translated by John Ruhräh. 114 pp. New York: Paul B. Hoeber Inc. \$1.50

This little book is a translation from the German of a short history of Japanese medicine written in 1911. It has been brought up to date by a second Japanese author and skillfully translated by Dr. Ruhräh of Baltimore. The various chapters cover the subject from the time of antiquity throughout the ages to the more recent history of Japanese medicine already familiar to most of the medical world. The facts appear to be well presented and one is surprised at the number of important advances made by Japanese workers. As an appendix

there is a chronological table of Japanese medicine and the book is well indexed. Although perhaps not up to the high standard set by previous volumes in this series, this book should find a place in the libraries of all medical historians.

Transactions of the American Gynecological Society. Volume 58, 1933. Edited by Otto H. Schwarz. 318 pp. St. Louis: C. V. Mosby Company, 1934.

The bulk of the Transactions edited by Otto Schwarz, is made up of three papers on the Toxemia of Pregnancy and five on Cancer of the Uterus. There is a discussion of the occipitoposterior position, based on a series of 657 cases describing the internal rotation of the head to anterior position in the opposite oblique diameter, with forceps above the brim of the pelvis. The most arresting paper is that by Lewis on the Effects of Theelin in Gonorrheal Vaginitis in Children. Specific vaginitis in little girls is a notoriously unsatisfactory condition from the standpoint of treatment and results. Lewis briefly reports eight cases treated only by injections of this hormone with astounding results. Follow-up examinations several months later showed a gratifying percentage of apparent cures. The volume contains an obituary note on William Lambert Richardson, beloved of hundreds of Harvard graduates of the nineties and early nineteen hundreds.

The Pocket Anatomy. By C. H. Fagge. Ninth Edition. Students Aids Series. 333 pp. Baltimore: William Wood and Company. \$2.00

Of the much abused and maligned group of so-called Quiz compends, Fagge's is one of the oldest and best. Published originally by George Brown, M.R.C.S. in 1876 as 'Aids to Anatomy', this book was reissued under its present title in 1881 and its first four editions were supervised by Edward Cotterell, M.D. The present editor began his work with the fifth edition in 1901 and in this present ninth edition has brought the publication to date. For the first time, there is used in this edition a new English terminology approved by the Anatomical Society of Great Britain and Ireland, which appears to be a happy compromise between the B.N.A. and the older vernacular nomenclature. A glossary tabulates the most notable changes from the terminology used in the eighth edition. The section on the brain has been revised in the light of recent physiologic investigations on the Central Nervous System, and the surgical anatomy of the Autonomic Nerve System has been revised in the light of recent progress in this department. Naturally such a work as 'The Pocket Anatomy' cannot, and is not intended to, be exhaustive. Apparently the mammary glands are among the more important of its major and perhaps in evitable omissions. Such a work is, of course, not designed to replace the standard systematic textbooks of Anatomy. It has, however, a definite place of value as a manual or syllabus for purposes of study and review.

Die Digitalisbehandlung Von Prof Dr Ernst Edens
Second Edition 154 pp Berlin and Vienna
Urban und Schwarzenberg, 1934

This extremely instructive monograph crystallizes a vast personal experience with the use of digitalis. It deals with its use in conditions associated both with a regular and with an irregular heart. The author considers the action of digitalis from the point of view of its "diastolic" (slowing of the heart) and "systolic" effects (alleviation of signs of decompensation without slowing of heart). He gives as the indications (sine qua non) for the use of digitalis, cardiac hypertrophy plus evidence of cardiac failure. As in most continental works, emphasis is placed upon the advantages of strophanthin over digitalis in its "systolic" effects. Excellent discussions are given of auricular fibrillation, pulsus alternans and the prognostic significance of bigeminy. The impossibility of predicting just what digitalis will do in the individual case and the need for cautious experimentation are stressed. The author shows how the drug may inhibit certain conditions such as extrasystoles, auricular fibrillation or pulsus alternans in one case, which it might tend to produce in another. A statistical analysis of digitalis effects, although of no value in predicting the response in a given case, but giving a clue as to the expected result, would enhance the value of this study. Without this, the unusual and atypical effects assumed an exaggerated importance. The volume, which offers an excellent résumé of practical cardiac pharmacodynamics, is written in clear, concise and entirely readable German and can be highly recommended.

The Queen Charlotte's Textbook of Obstetrics By Aleck W Bourne and others Third Edition 679 pp Baltimore William Wood and Company \$6 00

Ever since the publication of its first edition, in 1927, the Queen Charlotte's Textbook of Obstetrics has represented the views and methods practiced by those constituting the Staff of Queen Charlotte's Maternity Hospital. This third edition, consequent upon subsequent changes in the Hospital Staff, brings to the Board of Editors of this volume Drs Bourne, Davies, Rivett, Phillips, Lane-Roberts, and Williams, the last of whom has replaced Dr Bannister. Some portions of this edition have been largely rewritten, including the chapters on Mal Presentation and Anesthesia. In other parts extensive revisions have been made and new procedures and techniques, such as the Zondek Aschheim Test and the Kleiland Forceps have been added. Twenty new illustrations have been added bringing the total to 301 text figures with four colored plates. Queen Charlotte's Hospital is to British Obstetrics what the Rotunda is to Irish and this volume, which has become a standard among obstetric textbooks, is also of value to the discriminating student of comparative obstetrics, as fairly representing the practice and teaching of the members of this Hospital Staff.

Traité de Physiologie Tome I. By Prof G E Roger and Prof Léon Binet. 1140 pp Paris Masson et Cie 145 fr

This volume, covering general physiology, is the eighth to appear in the system of physiology edited by Roger and Binet. It is an interesting presentation of a wide range of material. Roger contributes a rather general summary of the properties of living matter and touches briefly on the vitamins, enzymes, and hormones in relation to life, and ends with an interesting discussion of senescence and death.

Policard contributes a short section on the general aspects of cellular physiology. Verne presents a section on tissue culture, which is short but excellent.

The discussion of the vitamins is decidedly disappointing and far from up to date.

The most ambitious section of the volume is that by Blanchetiere discussing the constituents of protoplasm, the constituents of a nucleus, of connective tissue, and the physiological rôle of the mineral elements. Perhaps the most interesting section to practicing physicians is that contributed by Lacasagne on the action of x rays and radioactive substances on living matter. This section, while short, is excellently done and written in a highly interesting style, perhaps a bit too speculative but nevertheless thought provoking. A section on ferments by Ambard and one on venins by Arthus conclude the volume.

A serious inconvenience is the absence of an index.

Text Book of Gynecology for Students and Practitioners By James Young Third Edition 411 pp New York The Macmillan Company \$3 75

This is the third edition of a book by a master of gynecology. It is, in fact, an up-to-date textbook on the subject. It tells everything that a medical student should know on which to base his later clinical experience and tells it all admirably in simple, easily understood English, accompanied by satisfactory illustrations which do not fail to explain and illustrate the subjects dealt with.

From a teacher's standpoint, it is particularly valuable because it emphasizes the description of gynecological conditions without going into too great detail in regard to surgical operations, although the main principles involved in the surgical cure of gynecological conditions is described.

Especially to be commended are the chapters on menstruation and a description of the hormones of the ovary and the action of the anterior lobe of the pituitary gland. An easily understood illustration showing the time relation between ovarian and uterine cycles with the increase and drop of estrin and progesterin is worth looking at.

Dr Young's book can be recommended to those who wish to review the subject and to students who are beginning it.

The New England Journal of Medicine

VOLUME 210

JUNE 21 1934

NUMBER 25

ARTIFICIAL MENSTRUATION*

Effect of Female Sex Hormones In Amenorrhea

BY JOHN ROCK M.D.†

THE cyclic changes occurring in the endometrium of the normal mature human female have been described with gratifying agreement by many investigators and the temporal correlation of these changes with those occurring in the follicular apparatus of the ovary convincingly demonstrated (Schroder, Novak, Bartelmez, O'Leary). The actual causal relationship of similar changes in the endometrium and ovaries of various other lower mammals as well as the relationship of changes almost identical with those of the human being, in the endometrium and ovaries of monkeys has been equally well demonstrated by several biologists (Allen, Hartman, Correr, etc.). These men have gone even farther and have shown that certain of the various changes occurring in the endometrium of laboratory mammals are actually the effects of the specific hormones, first of the developing follicle, folliculin, or estrin or theelin, and secondly of the corpus luteum corporin, or progestin. It was fair to assume then, that the same correlated changes in the human ovary and endometrium were cause and effect phenomena attributable to the same hormones. Incontrovertible demonstration of this causal relationship in human beings has been impossible for obvious reasons, but a few clinical reports suffice to justify the assumption.

Let us first review the correlated changes occurring in the endometrium and ovaries, and later consider the evidence of a causal relationship between them.

Immediately after the menstrual flow has begun and while it ensues (Bartelmez) regeneration of the defects made in the mucosa by separation of fragments is rapidly carried on, probably to a large extent by the embryonic histocytes of the stroma (Papanicolaou, Bain) and also by the glandular epithelium (Schroder, Novak, O'Leary) so that almost as soon as menstruation is over the uterine cavity is lined by a thin mucosa about 2 mm in diameter, consisting of simple straight glands and dense lightly vascularized stroma. The epithelial cells lining the cavity of the uterus as well as that of the glands are barely columnar, the nucleus is near the middle and the volume of the nucleus is to that

of the cell as 1:2.2 (O'Leary). The stroma cells are closely packed, the nuclei small, and the cytoplasm almost too slight to be seen, except in the occasional connective tissue cell. Wandering cells are few. At this stage the corpus luteum of the preceding ovulation is rapidly regressing and the new follicles are beginning to grow. Comparatively small amounts of folliculin are thus available.

As the dominant follicle acquires supremacy and grows rapidly during the next several days, larger amounts of folliculin are elaborated. After the first week mitotic figures are frequent in glandular epithelium. This then, is the proliferative phase. The cells of the surface and glandular epithelium become higher. By the eleventh day the nuclei have approached the base of the cells and have increased in size with the cytoplasm and the ratio of nuclear to the cytoplasmic mass is roughly as 1:2.9, which is much the same as at the beginning of this phase. The nucleus comprises 34 per cent of the cell volume although the cells are taller and narrower. The glands, because of the invagination, are necessarily longer and are straight. The stroma is less dense but there is no great change in the stroma cells at first. As the amount of folliculin is increased by the growing follicle which during this phase ruptures with ovulation and continues on to form the corpus luteum, the proliferation of the existing glands progresses, new ones grow upward from those of the basal layer and some of the older ones sprout branches (O'Leary). The glands are thus more numerous and close together. The stroma becomes even less dense, possibly with edema, certainly with some kind of fluid. Its vascularity increases, or at least its vessels are more noticeable, and its cells swell, so that not only are the nuclei larger but in most cells the cytoplasm as well has increased to easily discernible proportions. The cytoplasm of the epithelial cells has almost doubled in volume, so the nucleus, increasing less, only takes up 27 per cent of the cell volume, a ratio of 1:3.6. The wandering cells increase in number, and toward the end of this phase include among them many free red corpuscles singly and in groups of varying size. Necessarily the thickness of the mucosa has increased, roughly another centimeter by the end of the third week (Bain).

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May 11 1934

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Toward the end of this, the regenerative phase though the corpus luteum has begun to form, the amount of progesterin is small while the production of folliculin is at its height. During the last week of the normal cycle, however, the corpus luteum is in the ascendancy, the proportion of progesterin increases, and at the same time the endometrium noticeably changes. This is the secretory or functional phase. The epithelial cells which at the beginning of this phase have acquired glycogen open up and disgorge their contents into the gland lumen. As a result their surface is frayed and they gradually approach the cuboidal shape. The nucleus is somewhat larger and takes up almost one-half the cell again. The glands, increased in number and lying close together, become very tortuous folding in and out or twisting on their long axes so that a cross-section shows many papillary projections into the lumina. They are dilated to several times their original diameter. The stroma is now widely distended with fluid and in the upper portion, especially, filled with extravasated blood. The arterioles are many, large, and engorged. In many places, the histiocytes of the stroma have increased in size, the nuclei having swollen some, but the cytoplasm more, so that many have now become large enough to be termed predecidual cells.

After two or three days of approximately this condition the mucosa goes on to form decidua if impregnation has occurred and the corpus luteum has grown, regressed, and contracted, if failure of impregnation allows regression of the corpus luteum. Such is normal menstruation.

The appearance of cyclic sanguineous flow, however, at least in certain monkeys, is no assurance that both the proliferative and secretory phases of endometrial activity, described above, have occurred. Hartman and others have shown that in the absence of the corpus luteum there is a cyclic bloody discharge in monkeys, and Corner has produced this in spayed animals by the use of theelin alone. The studies reported here were undertaken in part to test the significance of these findings in clinical gynecology.

Folliculin (in the form of Progynon-B) alone, and the same folliculin followed by corporin in the form of Proluton-B* were given to five patients with amenorrhea of at least a year's duration, in this attempt to study the normal influence of the follicular apparatus on the human endometrium. All medication was given deep in the gluteal muscles. Apparently normal menstruation promptly ensued in four cases and slight staining in the fifth. Biopsies of the endometrium were obtained before, during and after the treatment in one case, and before and after in three others, in an effort to identify the specific effects of each hormone. This was

done by a modified Klinger and Burch suction technique. A simple open tube was used, 3 mm. in diameter with a curved, sharpened and notched hook over the uterine end made by prolonging and bending over one-quarter of the wall of the tube to within 3 mm. of the opposite side, leaving the lateral walls open. This was attached by a short rubber connection to a tight glass syringe. A cock was placed in the proximal end of the tube to insure maintenance of negative pressure in it during its withdrawal from the uterus after the syringe was removed. The contents stripped from the uterus by gentle stroking of the curette and sucked into the tube by the syringe, were then washed into a bottle with 10 per cent formalin. This procedure, simple to execute, is but moderately painful and for such a short time as to be not objectionable to the patient.

Kaufmann in 1932 at the Charité in Berlin using the same preparations as in these experiments obtained what he considered full progesterational response from the endometrium. Werner and Collins working with castrated women, as well as Kaufmann working with intact women with amenorrhea obtained proliferating endometrium and subsequent bleeding with only folliculin. The purpose of the trials reported here was to repeat Kaufmann's work as well as to test if possible the value of the suction technique in studies of the endometrium. If the specific effects of each hormone on the endometrium can be thus determined, such a method offers a simple objective test of the normality of the follicular apparatus. The former common clinical assumption that the ovary is functioning properly and ovulation occurring, if menstruation takes place regularly, is of course no longer justified. Bleeding from the interval type of endometrium, produced if only folliculin is exhibited, has been repeatedly brought about in human beings (Kaufmann, Werner and Collins). As has been said, it occurs normally during the non-mating season in monkeys (Hartman, Corner) when follicular development is but partial, ovulation does not take place, and no corpus luteum is formed. On the other hand failure to menstruate in a mature human female can no longer be always attributed to persistent corpus luteum, a fallacy based on the probability that the true corpus luteum of pregnancy prevents menstruation in the first few weeks, and that in the nonpregnant the ripe, false corpus luteum inhibits the bleeding which will occur when the luteal body regresses. In some of the amenorrheics at least, as is the case in the four described here, not only is there no probable corpus luteum effect demonstrable in the endometrium before treatment but not even any extensive folliculin effect.

*The materials used in the study were generously supplied by Schering Corporation of New York.

†A suction curette as described may be obtained from Hillier & Heuser, Cambria Street, Boston.

CASE REPORTS

108/67 L—, aged 33 1 ch 1925 Cta every 3-4 mos until amenorrhea began July, 1931 Some staining for 1 wk April 7 to April 14, 1932 Endometrium on April 7 characteristic of late pro-

Dec 8 Biopsy The endometrium was again back to the resting almost atrophic condition usually seen before treatment. Fig 1.
Jan 5 The same
Jan 5 8, 12, 16, 19—10,000 r u Progynon B each day
Jan. 24, 25 26, 27—10 rab u Proluton B each day



FIG 1 L. 108/67 Dec. 8 1933 Amenorrheic before treatment. Scant specimen. Thin mucosa no glandular stroma obtained. Dense low columnar surface epithellum. Rare mitotic figures. Early resting endometrium. (120 X)



FIG 2 L. 108/67 Jan 27 1934 Amenorrheic after treatment with 50 000 r u. Progynon B and 30 rab u. Proluton B Two days before apparently normal scant menstruation. Hyperplasia of glands. Swollen vacuolated tall columnar epithelial cells. Decrease in density of stroma. Swelling of many stroma cells. Extravasation of blood. Early secretory endometrium (120 X)

liferation phase No clear evidence of secretory activity

Specimens of endometrium at various times during 1933 after folliculin by mouth showed dysplasia of varying degrees

Jan 27 Biopsy Functioning endometrium Fig 2
Jan 29 Flowed Slight staining Jan. 30 and 31

109/122 R—, aged 29 1 ch. 1929 Amenorrhea since

Various treatments with folliculin and Antultrin S without relief. Specimens in Nov and Dec, 1933 were too small for diagnosis, thus strongly suggesting a thin atrophied endometrium.

Jan 12, 16, 19, 23, 26—10,000 r u Progynon B each day

P C C —, aged 26 M 3 yrs Sterility 1 yr No children
Cta 13, reg until cta Sept. 1932 Amenorrhea since Mild hot flashes 12 times a day No gain in wt. B M R. 0.1 per cent.
Sept 2, '33 Biopsy Atrophied endometrium Fig 4



FIG 3 R 109/122 Feb 2 1933 Amenorrheic after treatment with 50 000 r u Progynon B and 30 rab u Proluton B. Endometrium characteristic of early secretory phase with functioning gland epithelium. Slight enlargement of stroma cells in many places and extensive extravasation of blood. (120 X)



FIG 4 P C C Sept 2 1933 Amenorrheic Before treatment. Atrophied endometrium (120 X)

Jan 30, 31	Feb 1, 2, 3—10 rab u Proluton B each day	Jan 12, 16, 19, 23, 26—10 000 ru Progynon B each day
Feb 2	Biopsy Functional endometrium with some dysplasia Fig 3	Jan. 30, 31 Feb 1, 2, 3—10 rab u Proluton B each day
Feb 4	Flowed, staining seven napkins	Feb 2 Biopsy Functioning endometrium Fig 5
Feb 5	Flowed, staining two napkins	Feb 4 to Feb 9 inclusive Flowed, staining 2 n p d
Feb 6	Stained	

March 9 Biopsy Atrophy of endometrium
 March 9 13, 16 20, 23—10 000 r u Progynon B each day
 March 24 Biopsy Proliferating endometrium No secretion.
 March 25 26, 27 Flowed staining 2 n p d

Aug 24 32 D & C Endometrial dysplasia
 No flow since Mild hot flashes for 1 yr
 Aug 12, 33 Ut normal size and position
 Biopsy Atrophy of endometrium
 Nov 2 4 6 8 10 13 15—10 000 r u Progynon B each day

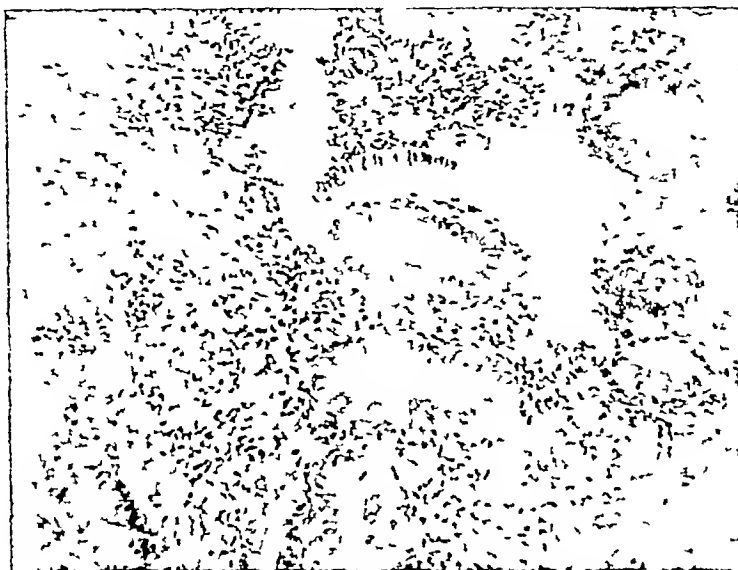


FIG 5 P C C Jan 12 19 4 After 50 000 r u Progynon B and 30 rab u Proluton B Mild secretory phase with swelling of nuclei of glandular epithelium and beginning pre-decidual change in stroma cells (120 X)



FIG 6 P C M Aug 12 1933 Amenorrheic before treatment. Atrophy of endometrium. (120 X)

P C M— aged 24 Cta. 15—25 29d—7d—4 n p d
 No skip
 P H Rt. oöphorectomy for cyst 1930 1st preg began Dec 1931 Misc Feb 1932 Flow frequent and irregular until June 1932 when it occurred daily X-ray treatment in July failed to stop it. Aug 1932 five times 500 r u. Ant-S on alternate days without effect.

Nov 17 Biopsy Proliferating endometrium
 Nov 17 10 000 r u Progynon B and 10 rab u Proluton B
 Nov 20 22 24 27 29—5 000 r u Progynon B and 10 rab u. Proluton B each day
 Nov 29 Biopsy Functioning endometrium Fig 7
 Dec. 3 to 12 inclusive Flowed 3-4 n p d.

Jan 11 to Jan. 25 inclusive—5 times 10,000 r.u. Progynon B
Jan 29 to Feb 3 inclusive—5 times 10 rab u Pro-luton B

Jan, 9, 12, 16, 19, 23—10,000 r.u. Progynon B each day
Jan. 25, 26, 27, 28—20 rab u Proluton B each day
Jan 30 Brown staining



FIG 7 P C M Nov 28 1933 Amenorrheic After treatment with 100 000 r u. Progynon B and 50 rab u Proluton B Atypical early functioning endometrium with swelling of glandular epithelium absence of mitoses and generalized extravasation of blood. No predecidua seen. (120 X)

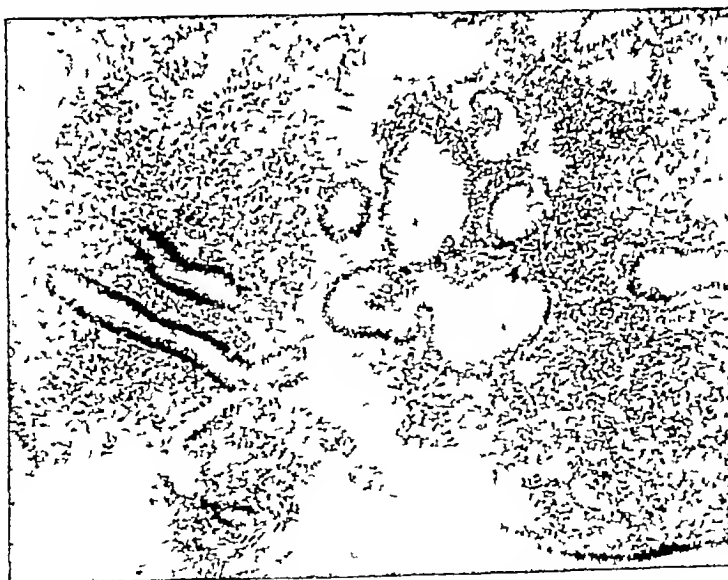


FIG 8 P C M Mar 3 1934 Amenorrheic after 50 000 r u. theelol sub cu Late proliferating endometrium without secretory activity of glands or swelling of stroma cells Some extravasation of blood (90 X)

Feb 4 to 9 inclusive Flowed staining 3-4 n p d
Feb 10, 13, 17, 20, 24 Theelol* 10,000 ru each day
March 3 Biopsy Proliferating endometrium Fig 8
March 5 6, 7 Flowed staining 4 n p d Severe cramps

P C W —, aged 23 Cta 16 reg for 3 mos—28d
4d—4 n p d Skipped Nov 1929 to Sept. 1930
Few cta 1931 and 1932 Cta March April, May,
1933 Amenorrhea since No hot flashes Slt.
breast symptoms

*Generously supplied by Parke Davis & Company

REMARKS

In considering the preceding experiments it must not be forgotten that all these women were intact mature females of childbearing age, and although amenorrheic for many months before the observations recorded here were made, none of them gave such evidence of ovarian atrophy as we see in normal women long past the

menopause In such women as these, a sporadic autogenous menstruation is not at all impossible or even unlikely It merely seems as if this were not the case with these particular women, and that therefore the endometrial changes described can probably be considered due to the preceding medication

Likewise we must remember that all parts of the uterine lining do not at any one time conform to a given cytological set-up This difference in response to endocrine stimulation on the part of various sections of the endometrium may be teleological,—witness the localization of decidua in the monkey (Wislocki) Perhaps something similar occurs in human beings, and will explain the occurrence of placenta previa as due to a lowering of the threshold for decidual change in a portion of the uterus not usually susceptible, or a resistance where it normally occurs It may at all events be said that in these as well as other studies of the endometrium to be reported later, there has been not only a great similarity in all the fragments of mucosa obtained at any one time, but these have agreed in cytological picture with what we would expect from experience with laboratory animals and surgical specimens from human beings Regarding deciduomata, it may be said that in further studies not reported here, the greatest variation among the fragments was in the degree of predecidual response on the part of the stroma cells Because of the uniformity of the fragments and because of their agreement with theoretical expectancy it seems as if the Klinger-Burch suction curette is a very serviceable instrument, and that the specimens obtained give a correct picture of endometrial response

If this is so, and these women can be assumed to have had quiescent ovaries during the trials, it has been demonstrated again that in human females proliferation of the endometrium is caused by folliculin If furthermore, we are willing to identify human with monkey physiology it has been reciprocally shown that Proluton-B is an active preparation of corporin, and that the secretory activity of the glandular epithelium is a specific corporin effect Kaufmann's experiments would be thus corroborated

The possibility of anovulatory flow has also again been demonstrated We know that this occurs in human beings with granulosa cell tumors To occur in otherwise normal human beings, sterility patients, for instance, we need only assume a sufficient folliculin production in follicles which do not thereby rupture with ovulation I believe the frequency of this has been overestimated, a creed which we are now using the suction curette to test

In the experiments reported, the time at which the flow occurred after the injections were stopped, is interesting In none did stain-

ing appear during the treatment In L— and R— the flow appeared six days after the last injection of Progynon-B during the first five of which corporin was given M— in one experiment, the second with her, waited ten days after the last injection of Progynon-B before flowing but during the first nine of these ten days Proluton-B was being given She, too, then, flowed the day after Proluton-B was stopped In the first trial with M—, she waited four days after the last Proluton-B injection, but she was getting Progynon-B with each Proluton B It seems therefore as if perhaps folliculin has a latent protective period for four days when given in these doses, but that Proluton-B protects the endometrium from flow only while it is given As exceptions, C—, in the second experiment, with Progynon-B waited only two days before flowing after the last injection whereas M—, in the third trial with her when only theelol was used, did not flow until nine days after the last injection

From the study of the endometria reported here and from many others it is clear that in neither folliculin nor in corporin have we the whole secret of bleeding It seems true, however, that massive extravasation of blood into the stroma takes place when folliculin is acting on the endometrium, but that the mucosa holds it in bounds while either folliculin or corporin is active

What is the clinical value of such findings as these? It will be noted that to secure most of the periods of flow from secretory endometrium, 50,000 ru of folliculin and 50 rabbit units of corporin were used during the three weeks preceding the flow Attempts demonstrably to influence the endometrium with smaller doses were unsatisfactory The present cost of effective therapeutics, then, at least five hundred dollars a month, is prohibitive, when one considers that the only human benefit from the flow is psychic But are we sure that only the endometrium is objective in this reaction to the ovarian hormone? There is much theorizing and a little experimental evidence that the ovary, too possibly secondarily to anterior pituitary changes, is responsive to its own secretions If this be so, and we can learn the mechanism may we not eventually strike nearer the source as well as the disadvantage of amenorrhea, by stirring up the ovary through its own hormone?

SUMMARY

The cyclic changes in the endometrium of mature human beings have been described and correlated with synchronous changes in the ovaries

A modification of the Klinger-Burch suction curette has been described and shown to be of service in the study of the endometrium and

through this of female sex-endocrine physiology

Seven instances of artificial menstruation in four patients have been described. In three instances the flow followed injections of only folliculin, in the other four folliculin was followed by corporin. When only folliculin was used the flow is shown to have been from endometrium in the proliferating phase. When both were used a true secretory endometrium was generated.

The changes in the endometrium were accomplished only with relatively huge doses of hormones.

NOTE

The writer is gratefully indebted to Dr. Frank A. Pemberton and Dr. George Van S. Smith for essential assistance in the work reported.

He wishes also to thank the Schering Corporation for the supplies of Progynon B and Proluton B, and Parke Davis and Company for supplies of theelol.

Because the colorless prints of the stained sections of endometria represent them so poorly, the writer will be glad to lend the sections to those who wish to study them.

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CONGENITAL SCLIOSIS*

A Review of Seventy-Seven Patients

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CONGENITAL scoliosis is the name usually given to lateral curvature of the spine which is present at birth and which is due to abnormalities in the vertebrae or their contiguous structures. There has been a tendency in recent years to group as congenital scoliosis only those cases which have shown vertebral deformation in roentgenograms¹ interpreted as congenital in origin. But reports have appeared in the literature² and observation has also been made in this clinic of definite scoliosis present at birth without any changes in the spine demonstrable in roentgenograms. This latter type of scoliosis is not common. It usually corrects readily under treatment and subsequently remains normal. In the series of cases reviewed here such congenital scoliosis without demonstrable abnormalities in the spine has been purposely omitted.

This study was made of all the children with congenital scoliosis who were seen in the Scoliosis Clinic of the Boston Children's Hospital from the organization of the Scoliosis Clinic in 1908 until the present time. There were sev-

enty-seven children with this type of deformity among 1483 cases of scoliosis treated in the clinic, of these 681 were diagnosed as structural scoliosis and 802 as physiological or functional scoliosis. This would give a frequency for congenital scoliosis of eleven plus per cent in the total number of cases of structural scoliosis. There were fifty-six girls and twenty-one boys. In these seventy-seven children data were collected in regard to the family and prenatal histories, the presence of other congenital defects, the type of curve, the nature of the spinal abnormalities, the kind and duration of treatment and the present condition, particularly in regard to the function of the spine.

Congenital scoliosis was thought to be extremely rare before the present century. First described by Mary³ in 1700, Coville⁴, in 1896, found it only once in an examination of one thousand children and was able to collect only a few cases from the literature. With the advent of the roentgenogram this deformity was discovered more easily, so that now it is not considered uncommon. There are no figures available in regard to its relative frequency in comparison with other deformities appearing at birth. Statistical studies of lateral curvature

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show that the incidence of congenital scoliosis in structural scoliosis varies between three per cent⁵ and eleven per cent⁶

Small groups of children suffering from congenital scoliosis have been studied by a number of observers. The vertebral abnormalities seen in roentgenograms were described by Putti⁷ who made a careful review of the theories of their pathogenesis. Sever⁸ studied a number of children with congenital defects of the spine and ribs from the standpoint of their etiology. Wierzejewski⁹ divided congenital defects of the vertebrae into five groups: 1, numerical variations; 2, disturbances in segmentation; 3, separation of the vertebra into parts; 4, wedge-shaped vertebrae; 5, irregularities in the development of the spinal joints. Hodgson¹⁰ in a discussion upon the grouping of these deformities showed the difficulty that one meets in finding a classification adequate for all of these abnormalities.

There are many theories upon the etiology of this condition.¹¹ Many of them are now only of historical interest. From the studies of Bardeen¹² and others¹³, it has been shown that these abnormalities arise before ossification occurs in the spinal column that is during the first six weeks of fetal life. The precursors of the vertebrae which develop from the sclerotomes are to a large extent potentially equal; their subsequent development (that is their segmental differentiation) depends largely upon their regional environment. A temporary disturbance in the development of adjacent muscles or viscera could cause a vertebra in a spinal segment to be different from the others as is occasionally observed at the dorsolumbar and lumbosacral region. Putti⁷ believed that a study of the phylogenetic relationship to lower vertebrates would help in the explanation of many vertebral deformities. Coville⁴ and Mouchet¹¹ have suggested a disturbance in the nutrition of the vertebral body at the time of chondrification as a cause of some of these abnormalities. Stockaid¹⁴ and others have shown that thermal and chemical changes can modify greatly the development of the embryo. Many factors may play a part in arresting, retarding, or accelerating the development of a special part such as a vertebra. Reid¹⁵ has suggested disease in the mother during early pregnancy as a possible cause. How much we can modify these suggested causes in preventing vertebral deformities must remain conjectural in the present state of our knowledge.

There is little evidence to support the theory that these abnormalities are hereditary except in rare instances of multiple physical deformities found where tendencies to such malformation are present in both parent cells.¹⁶ In this group of cases a history of physical deformities

in the immediate family was obtained in only two cases, one a unilateral club-foot in a brother, the other deaf mutism in a sister. The prenatal histories revealed nothing unusual in any of the cases where they could be obtained. Two of the children in this group were born prematurely: one at the eighth month and one at eight and one-half months of the pregnancy.

The types of curves found, showed no definite predilection to any particular form of curvature. Table 1 gives the frequency of the different kinds of curvature. Most of the curves were double curves, those with convexity to the right in the dorsal region and to the left in the lumbar region were the most common. There was one triple curve. In practically all instances the curve whether single or double in form remained the same in form although not in severity throughout the period of observation. This characteristic of relative fixation of the curvature in congenital scoliosis has been mentioned by a number of observers.¹⁷

TABLE 1
TYPES OF CURVES

Left cervical right dorsal	2
Left cervicodorsal right dorsolumbar	13
Left dorsal right lumbar	8
Left cervical, right dorsal left lumbar	1
Left dorsal	5
Left lumbar	5
Right cervical left dorsal	2
Right cervicodorsal left dorsolumbar	3
Right dorsal left lumbar	18
Right dorsal	16
Right lumbar	4

Congenital scoliosis is frequently not noticed as are other forms of scoliosis until severe deformity occurs. In these children the curvatures were noticed at birth in only eighteen during the first six months in eleven before two years in nineteen and after six years in fourteen. No subjective symptoms were present in any of the cases. Other signs besides the curvature, which led the parents to seek treatment, were a high shoulder due to an associated Sprengel's deformity in one child. A short neck due to congenital abnormalities of the cervical spine¹⁸ led to the diagnosis in two children. Hypertrichosis over the spinal column caused the parents to seek medical advice in three instances. Asymmetry of the body exclusive of the spine, was found by two of the mothers.

It is almost impossible to group cases of congenital scoliosis according to the type and extent of the spinal deformity. While certain kinds of deformities of the vertebrae and ribs appear again and again, the pattern is never duplicated, and there are no two spines with like deformities in this entire group. Table 2 gives the frequency of the usual deformities in

this group of cases. The numerals refer to the number of cases in which the listed deformity was observed.

TABLE 2
SPINAL DEFORMITIES

Absence of ribs	
Unilateral	7
Bilateral	3
Supernumerary ribs	
Unilateral	1
Bilateral	2
Fusion of ribs	
Unilateral	6
Bilateral	3
Change in number of vertebrae (Cervical, dorsal and lumbar spine)	
Less than 24	3
More than 24	1
Change in distribution of vertebrae	
Six lumbar and eleven dorsal	2
Four lumbar and thirteen dorsal	1
Fusion of vertebrae	
Cervical region	1
Dorsal region	2
Lumbar region	2
Bifid vertebrae	
Cervical region	1
Dorsal region	7
Lumbar region	1
Hemivertebrae	
Cervical region	3
Dorsal region	5
Lumbar region	3
Wedge-shaped vertebrae	
Cervical region	1
Dorsal region	1
Lumbar region	1
Spina bifida occulta	21
Platyspondylisis	4



FIG 1 Roentgenogram of child of five mentioned in text. There are twelve ribs on the right side and eleven on the left side. There is fusion of the ribs from the third to eighth ribs on the left side. There is a spina bifida occulta of the entire dorsal and lumbar spine. There are deformities of all of the dorsal vertebrae.



FIG 2 Roentgenogram of child of four showing deformities confined to the cervicodorsal junction. The fourth and fifth cervical are fused on the left side. The sixth cervical shows a hemivertebra on the right side. The seventh cervical is bifid.

In only three instances was a single deformity found. In all of the others multiple spinal deformities were present. In one case a child, who is now five, almost all of them were present (fig 1). This child has a severe right dorsal-left lumbar curvature with marked asymmetry of the thorax, but is very active nevertheless and has no subjective symptoms. More deformities, particularly in the laminae and articular facets will probably become evident as ossification progresses in the vertebrae of the younger children. Bifid vertebrae and hemivertebrae were the most common deformities found.¹⁹ Böhm²⁰ had considered such abnormalities as the cause in certain cases of developmental scoliosis in his study in 1906. The findings in the roentgenograms agreed with the observation of Mouchet and Roederer²¹ that hemivertebrae were prac-

tically always associated with more important deformities elsewhere in the spine. In this series no spine showed a single hemivertebra as the only abnormality.

Congenital defects were more commonly observed at the cervicodorsal and dorsolumbar regions of the spine, points where anatomical structures as well as function in the vertebrae are differentiated (fig 2). Costal anomalies were associated in every instance with extensive vertebral defects. Segmental variations, i.e., a difference in the number of cervical, dorsal, and lumbar vertebrae, were observed in only four cases. Wedge-shaped vertebrae were seen in the roentgenograms from four spines. In two where earlier studies had not been possible it could not be determined whether the wedge-shaped vertebrae were congenital or developmental deformities. Platyspondylism²⁰, an unusual flattening of the vertebrae, was seen four times. All of these defects remained practically unchanged in subsequent roentgenograms throughout the growing period.

Associated abnormalities in other parts of the body are found not uncommonly with congenital scoliosis. In one child there was an absence of all of the fingers. One child had syndactylism. Clinodactylism²³, a flexion deformity of the fingers due to contracture in the subcutaneous tissues on the palmar side of the fingers, was observed in one case. A Sprengel's deformity was present in three. In two children cervical ribs were found. A unilateral absence of the pectoralis major muscle was observed in one boy. One child showed congenital deafness in both ears. This series of associated deformities, while too small to give much weight to any argument, makes one wonder if in these instances one was dealing with a weakened but visible germ plasm. Later studies of the offspring of these individuals will be of interest.

Many different opinions in regard to the prognosis of congenital scoliosis have been given in the past. This has resulted probably from the great variation in the kind and extent of spinal deformity. Congenital scoliosis follows the same mechanical laws in its progression or its improvement as any other type of scoliosis. The greater rigidity of the spine which is usually found in congenital scoliosis tends to make its progression somewhat slower and its correction somewhat more difficult. Extensive costal and vertebral anomalies which are always associated with muscular defects frequently lead to extensive asymmetry of the thorax, much worse than one would expect from the extent of the scoliosis, as Sternberg²⁴ has shown. In spite of these, however, function is carried out, by what structures are present, surprisingly well.

Some of the less serious cases with vertebral anomalies which do not alter seriously the alignment of the spinal column seem to remain practically unchanged whether treatment is given or not. Each case is an individual problem and no natural course can be plotted for any single case or group of cases as the study of the end results in this series shows.

We believe that a fair prognosis is justifiable in congenital scoliosis, if the full cooperation of the child and the parents can be secured. Our own experience confirms the statement, frequently made, that increasing deformity is readily prevented, and that in infancy the scoliosis is often almost completely corrected without great difficulty. Unfortunately, many of the cases studied here have not shown so happy an outcome. Treatment was often irregular, soon discontinued, or improperly followed. In recent years due to the economic depression, many children have changed their residences without leaving a trace whereby our social service workers could follow them. Irregular practitioners, and appliances advertised with extravagant claims, have misled not a few.

Our observations lead us to conclude that congenital scoliosis is never wholly cured except in the occasional case, with mild deformity, that is followed carefully from earliest infancy until growth is obtained. The greatest improvement in bodily symmetry and the correction of the scoliosis has been seen in those children who have been followed carefully since birth. We are accustomed to measure improvement by two methods, first, by the general appearance and functional ability of the body, often the most convincing to parents, and secondly, by such clinical measurements as we can make of the spine and thorax including photographs and x-ray examination. As table 3 shows, a large number of these children demonstrated practically no change in their scoliosis. In two of these no treatment of any sort had been given, they were simply kept under observation for a number of years. Both of these were mild curves with only slight vertebral abnormality. Failure to show improvement in twelve resulted from the severity of the spinal deformity, from bad judgment in the type of treatment given, or from poor cooperation on the part of the patient. Two of these children have died, one, a girl of twenty, with scoliosis unchanged, from pneumonia, and the other, a girl of seventeen, whose scoliosis had grown worse, from heart disease. Thirteen children could not be traced.

TABLE 3
END RESULTS

Cured	0 (known)
Improved	24
Condition unchanged	26
Worse	12
Condition unknown	13
Dead	2

Treatment in this group of children varied greatly in this twenty-five year period as is shown in table 4. While noteworthy advances in the treatment of scoliosis have come in the last decade, efficient treatment for all cases of congenital scoliosis is still unknown²⁵. The earlier treatment is begun and the more uninterrupted.

ly it is continued to the end of the growing period the better the outcome will be

Eight children were given no treatment. Three of them came simply for consultation, two were kept under observation and in the other three, treatment was refused. Exercises alone have been rarely used except in the very mild forms of congenital scoliosis. The large number given in table 4 includes many where a preliminary series of exercises was given preparatory to the use of apparatus but where, as is found in all outpatient clinics, treatment was discontinued before the second step in the treatment was reached. Following the observations of Bradford and Lovett in this field, exercises were given in addition to support in almost all of the cases. Plain jackets were used for simply holding the spines when no further correction could be obtained, and support of the spine was necessary. They were used instead of more elaborate braces, usually for the sake of economy. "Derotation jackets" were found effective only in the exceptional case. Because of the fixed anatomical abnormalities, pressure upon the ribs rarely produced much change in the deformity. The author, who has used both "derotation jackets" (with pressure upon the prominent ribs) and "lateralization jackets" (with hinge and lateral turnbuckle), has observed much more effective correction from the latter method in congenital scoliosis. Posterior plaster shells for the recumbent treatment of infants were used in thirteen cases. In all of these children the shell was followed by some form of ambulatory support if the children remained under treatment.

ent 4 Such upbuilding measures as are indicated to improve the general health. Any treatment that is undertaken should continue until full growth in stature has occurred, since the changes which come with increase in height modify the mechanics of the spine to a certain degree throughout the growing period.

For congenital scoliosis in infancy we have found the most effective treatment to be the use of a molded plaster shell which holds the spine in a slightly overcorrected position. This can be made while the child is held with the curvature overcorrected as described by Harrenstein² or a turnbuckle shell can be given, as reported by Brewster²⁶. Such procedures have been found to be far more effective than the strapping of the child to a Bradford frame. Where there are severe congenital abnormalities it has been found advisable at times to continue treatment in recumbency with a plaster shell, long beyond the usual period for beginning to walk. In the less severe cases at the usual time for walking, a plain plaster jacket is applied with the child in suspension, and the child is permitted to creep and walk in this. Where much curvature persists, a turnbuckle jacket is used²⁷. Reinforced corsets of canvas or leather have been found unsatisfactory in maintaining the correction in the spine except in the congenital scoliosis of mild degree.

In the last ten years exercises have been given in practically all cases of congenital scoliosis in conjunction with some type of support. These exercises have been of two kinds, mobilizing exercises to overcome contractures of the muscles and ligaments, as described by Lovett²⁸, in order

TABLE 4
TREATMENT

Treatment	Cases	Present Condition			
		Improved	Unchanged	Worse	Unknown
No treatment	8	0	4	0	4
Exercises alone	21	5	9	2	5
Turnbuckle jacket	18	10 (1 dead)	5	3	0
Plain plaster jacket	6	2	2	1	1
Plaster shell followed by turnbuckle jacket	8	4	2	0	2
Plaster shell	5	0	1	3	1
Derotation jacket	3	1	1	1	0
Bradford frame	2	0	1 (dead)	1	0
Corset	2	1	1	0	0
Operations					
Fusion of spine	2	1	1	0	0
Lowering of scapula	2	1	0	1	0

Good results can be obtained by many methods, as the end-results from this clinic have shown. Adequate treatment for congenital scoliosis must include 1. Mobilization of the rigidity and lessening of the curvature of the spine, which should be carried out not too rapidly or forcefully. 2. Strengthening of the muscle groups which support the spine, by exercise. 3. The development of the best posture obtainable with the deformities which are pres-

that the curvature might be lessened, and postural exercises to secure better general muscular development, to obtain better respiratory function and to improve the balance of the spinal column. In a number of the cases where partial correction of the curvature had occurred, the children were able to maintain the improved position with their own musculature. Attempts at correction both by turnbuckle jackets and exercises were continued as long as im-

provement in the spinal deformity was observed. Jackets and other spinal supports were removed gradually when no further correction could be obtained, and when the muscles which support the spine were well developed and the poise of the body was good.

Vigorous redressment as advocated by earlier writers has not been used. The rigidity and the bony deformities make it both a difficult and dangerous procedure in congenital scoliosis. Correction even by slow stretching is a sufficiently difficult procedure except in the very young. We have found that it is much easier to start in infancy and guide the spine into straighter growth with the gradual increase in height than it is to correct deformities. Some improvement in the spinal and thoracic deformities can be obtained even in adults, but good functional as well as anatomic rehabilitation, at least in the severe cases, can only be expected where the spine is made to grow relatively straight and is used from early childhood in as nearly normal function as possible.

Removal of a portion of a vertebra²⁹, or of a hemivertebra has been reported³⁰. In none of the cases reported where this operation has been performed has sufficient time elapsed so that full appraisal of this therapy can be made. In practically all cases a hemivertebra or a wedge-shaped vertebra is found with other deformities in the spine. The successful removal of such vertebrae will only partially correct the disturbance of balance. While this procedure was considered in one case, it has not been performed in this clinic. An attempt has been made to prevent increase in deformity by early spinal fusion³¹ in only one case. In this case while increase in the curvature has been helped materially by spinal fusion, support and supervision will be necessary for a number of years more. Fifty-two of the children in this series are still under treatment either in this clinic or under the care of other physicians.

Conclusions 1 Congenital scoliosis is not an uncommon spinal deformity. It comprises 11 per cent of the cases of structural scoliosis seen at the Boston Children's Hospital. 2 The vertebral deformities occur in early fetal life. We do not know as yet how to prevent their occurrence. 3 Early diagnosis is made too rarely. The deformity is usually the only physical sign

4 Multiple deformities scattered throughout the spine were found in all except three children. 5 Treatment must begin early if good functional and anatomic correction is to be obtained. 6 Supervision must be continued until full growth has occurred.

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THE ANEMIAS OF PREGNANCY*

BY MAX DAVIS, M.D.,† AND ELISABETH W. WALKER, A.M.†

THE problem of anemia during pregnancy has not received so much attention from the medical profession as it deserves. Very few

clinics, and even fewer private practitioners, go to the trouble of performing routine blood counts and hemoglobin determinations on their pregnant patients, despite the fact that a patient with anemia is definitely less fit for the intense strain of labor. The attention of the obstetrician has been focused with great keenness, and justly so, upon the dangers of toxemia, but his interest should also be sufficiently aroused

*From the Robinson Memorial, the Obstetrical Department of the Massachusetts Memorial Hospitals and from the Boston University School of Medicine. Delivered before the New England Obstetrical and Gynecological Society on November 30 1932.

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to consider the anemia of pregnancy, which is an ever-present, though less threatening problem than the toxemias, and occurs in a far larger proportion of patients than do the latter

Two distinct types of anemia occur during pregnancy—one, a typical secondary anemia, the other, resembling pernicious anemia in its blood findings. Until very recently, most of the studies dealing with the anemias of pregnancy focused their attention upon the latter group, which occurs but rarely. This type is usually amenable to treatment only by blood transfusion. It will not be further considered in this discussion, as in our series we did not meet with a single typical case of this group.

The exact etiology of the secondary anemia has not been definitely established. Various causes have been assigned as possible etiologic factors, but no one of them has as yet gained a clear title to this distinction. For example, overdestruction of the red blood cells in the placenta by various hemolysins with abstraction of the iron by the fetus, deficiency of replacement of these destroyed cells by the blood-forming organs, hydremia, foci of infection, a preceding anemia, vitamin deficiency—all have been accused as etiologic agents. Some proof has been advanced for all of these factors, and it is possible that a combination of several of them may be the final solution.

During the last three or four years, the work of Galloway, Moore, Bland, Weiss, Strauss, and others has helped to bring this problem somewhat to the fore. These investigators have found that forty-seven to sixty-five per cent of pregnant women tend to develop anemia during pregnancy, and that this anemia is progressive. It has also been established that a certain number of these patients recover spontaneously after delivery. It is felt that although a definite etiologic factor is not yet known, nevertheless empirical treatment for the anemia should be undertaken the better to prepare the patient for the hazards of labor and the puerperium. Various substances have been suggested for treatment, with diverse reports as to their value.

Our own study was undertaken in the effort to establish in a series of untreated cases the exact degree of the progress of the anemia during pregnancy. This was accomplished by doing frequent complete blood counts—red cell, white cell, and hemoglobin determinations, and differential counts—on each patient throughout her pregnancy and puerperium. It was also decided to test the value of various preparations in treating another series of patients, and to check the blood findings in exactly the same manner. The patients were all followed in the prenatal clinic of the Robinson Memorial, the blood for examination being taken by three dif-

ferent technicians.* The counts were all performed by one of us, Mrs. Walker, in order to establish uniformity in the results. Two hundred cells were counted for each differential count. The hemoglobin determinations were all performed by the Hayden-Hauser hemoglobinometer. From six to ten counts were taken on most of the patients, counts being done at each visit to the prenatal clinic, and also within twenty-four hours of delivery, and at periods of one week, two weeks, and six weeks postpartum. Sixty-nine patients were in the untreated group, and one hundred and twenty in the treated group. The latter were subdivided into six sub-groups of twenty each, each group receiving a different preparation†. Unfortunately, as will be seen from the tables below, thirty-one of the treated patients could not be followed throughout, because they either left the clinic or refused to continue with the medication.

We classed as anemic all patients whose blood findings fell below the criteria accepted as the lowest limits of the normal, namely, a hemoglobin of seventy per cent and a red cell count of three and one-half million. Thus, we discovered that forty-three per cent of the 161 patients tested had a secondary anemia. If, however, we also included a borderline group which had a hemoglobin percentage between seventy and seventy-seven, red cell counts between three and one-half and four million, and the signs of secondary anemia in the smear, our percentage of such patients rose to fifty-six per cent. It is particularly interesting to note that the percentage of anemic patients changed very markedly with the seasonal variation of the year. Of the 161 cases, examined in the late summer and early fall, 43 per cent showed an anemia. These formed the untreated control group. Our treated cases, selected in February and March, were chosen from a group of 133 patients of whom ninety per cent had anemia‡.

Table I below shows the average counts in the untreated anemic cases throughout the period in which they were followed.

It is thus seen that in untreated cases, the anemia is progressive, and that there is a moderate spontaneous recovery during the lying-in period. We did not find any diminution in the anemia in the two-week period preceding term, as has been suggested by some authors. We did, however, find a definite increase in the anemia at the examination at the sixth week postpartum.

*We wish to express our thanks to Dr. F. L. Belding for his cooperation in permitting the Misses Hinckley and Bland and Mrs. Stewart from his laboratory to take these counts for us. We also wish to thank the latter for their aid and interest in this work.

†We wish to thank the various companies that so graciously furnished us with all the necessary material for carrying out this study. The Myeladol was furnished by the Upjohn Company, the Neoboviline 23 by the Bovinine Company, the iron manganese and copper tablet by the G. D. Searle Company, the liver and iron by Eli Lilly Company and the ventriculin and iron by Parke Davis & Co.

‡If the borderline cases are also included the percentage of anemia rises to ninety-five per cent.

The disadvantages incurred by lack of treatment were no doubt aggravated by the inability of the patients to afford proper food and help at home on returning from the hospital. The resultant extra work demanded from the weakened patient, thus definitely retarded her recovery

in respect to the maintenance and increase of the hemoglobin and red blood cells in comparison with the condition of the patients before treatment began was ventriculin and iron, and the second in rank was liver and iron.

Table VIII illustrates a comparison of certain

TABLE I
AVERAGES OF BLOOD FINDINGS IN THE UNTREATED ANEMIA CASES*

	Hgb	Rbc	C I	Wbc	PMN	Lym	End	Eos	Bas
Second Trimester	64.9	353.3	0.93	9,590	74.9	19.9	4.1	0.77	0.23
Third Trimester	62.8	345.5	0.96	9,992	72.5	20.8	6.11	0.72	0.18
First 24 hours postpartum	64.3	368.5	0.86	13,729	77.4	16.7	5.3	0.57	0.16
First week postpartum	66.1	376.3	0.87	10,996	71	21.4	6.1	1.3	0.3
Second week postpartum	68.9	389.8	0.88	9,931	70	23.6	5.25	1.33	0.2
Sixth week postpartum	68.7	378.5	0.91	6,940	56.1	35.2	8.96	1.5	0.4

*The number of cases in the First Trimester was too small to give a fair average.

Tables II to VII inclusive deal with the treated cases. In this group we also included those so-called borderline cases which had low hemoglobin percentages and smears showing secondary anemia, but which had red cell counts of between three and one-half and four million. These tables are practically self-explanatory and need but little additional interpretation.

interesting factors between all the untreated cases and the treated cases. The percentage of primiparae and multiparae in both groups is practically identical so that the comparison is thus more accurate from this point of view.* In the untreated cases there were double the number with elevated blood pressure, most of whom were of the pre-eclamptic type.

TABLE II
AVERAGES OF BLOOD FINDINGS IN TREATED CASES BEFORE BEGINNING OF TREATMENT*

Groups According to Medication to Be Given	Hgb	Rbc	C I	Wbc	PMN	Lym	End	Eos	Bas	No Cases
Myeladot†	66.3	389.1	0.84	10,418	73.9	18	7.3	0.66	0.08	12
Neobovinine-20‡	71.7	380.1	0.95	10,303	71.7	17.5	9.4	1.19	0.29	13
Iron, Copper, Manganese, Calcium	67.1	366.6	0.92	9,876	70.7	20.8	7.5	0.85	0.10	17
Blauds with Arsenic and Strychnine	64.1	395.1	0.80	11,644	74.8	17.6	6.9	0.33	0.33	11
Liver and Iron	68	395.5	0.85	10,540	73.9	19.3	6.3	0.35	0.15	18
Ventriculin and Iron	66.6	378.1	0.89	10,000	73	18.4	7.9	0.70	0.04	18

*The dosage of these substances was as follows:

Myeladot—one tablespoonful t. i. d.
Neobovinine-20—one tablespoonful t. i. d.
Iron, Copper, Manganese, Calcium—2 tablets t. i. d.
Blauds with Arsenic and Strychnine—2 tablets t. i. d.
Liver and Iron—one teaspoonful t. i. d.
Ventriculin and Iron—10 to 20 grams daily.

†Each fluid ounce contains:

Super D cod liver oil (Upjohn) 120 minims
Glycerinated Extract Red Bone Marrow 10
Iron and Ammonium Citrate 4 grains
Malt extract qs

‡An original organic compound of liver extract and beef hemoglobin. Each tablespoonful contains the equivalent of 0.53 ounces of fresh whole liver.

The tables show that treatment definitely stops the downward curve during the second and third trimesters, particularly by raising the hemoglobin percentage. The recovery after delivery is more rapid, also, being somewhat more evident in the percentage of hemoglobin than in the red cell count, although the latter also is raised. It must not be forgotten that this improvement is evident despite the fact that the economic circumstances of these patients do not permit them the best possible care for their condition. The white blood cell count and the percentage of polymorphonuclear cells rise definitely during labor and remain high for the first few days after delivery, gradually returning to normal by the second week postpartum. As for the relative value of the various preparations used in this study, the tables again indicate clearly the results. The best preparation

and there were almost five times as many premature deliveries. These two factors probably account for the increased fetal mortality in the untreated cases. Labor was definitely longer in the untreated cases. Probably the most important difference between the two groups was the higher percentage of morbidity†, — in the untreated group, 27.9 per cent as against 11.2 per cent in the treated group. These are the infections which are so dangerous to the future health of the mother, and anything which will help to prevent them is certainly of great value in the care of the patient. We do not mean to imply by table VIII that anemia is the cause for the differences indicated therein. It

	Untreated (69 Cases)	Treated (89 Cases)
*Primiparae	32.2%	31.5%
Multiparae	67.8%	68.5%

†The criterion for morbidity was a rise in temperature for 24 hours to 100.4 F° or over.

to consider the anemia of pregnancy, which is an ever-present, though less threatening problem than the toxemias, and occurs in a far larger proportion of patients than do the latter.

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Table I below shows the average counts in the untreated anemic cases throughout the period in which they were followed.

It is thus seen that in untreated cases, the anemia is progressive, and that there is a moderate spontaneous recovery during the lying-in period. We did not find any diminution in the anemia in the two-week period preceding term, as has been suggested by some authors. We did, however, find a definite increase in the anemia at the examination at the sixth week postpartum.

*We wish to express our thanks to Dr. F. L. Baiding for his cooperation in permitting the Misses Hinckley and Bland and Mrs. Stewart from his laboratory to take these counts for us. We also wish to thank the latter for their aid and interest in this work.

†We wish to thank the various companies that so graciously furnished us with all the necessary material for carrying out this study. The Myeladol was furnished by the Upjohn Company, the "obovinin" by the Bovinine Company, the iron manganess and copper tablet by the G. D. Searle Company, the liver and iron by Eli Lilly Company, and the ventriculin and iron by Parke, Davis & Co.

‡If the borderline cases are also included, the percentage of anemia rises to ninety-five per cent.

The disadvantages incurred by lack of treatment were no doubt aggravated by the inability of the patients to afford proper food and help at home on returning from the hospital. The resultant extra work demanded from the weakened patient, thus definitely retarded her recovery

in respect to the maintenance and increase of the hemoglobin and red blood cells in comparison with the condition of the patients before treatment began was ventriculin and iron, and the second in rank was liver and iron

Table VIII illustrates a comparison of certain

TABLE I
AVERAGES OF BLOOD FINDINGS IN THE UNTREATED ANEMIA CASES*

	Hgb	Rbc	C I	Wbc	PMN	Lym	End	Eos	Bas
Second Trimester	64.9	353.3	0.93	9,590	74.9	19.9	4.1	0.77	0.23
Third Trimester	62.8	345.5	0.96	9,992	72.5	20.8	6.11	0.72	0.18
First 24 hours postpartum	64.3	368.5	0.86	13,729	77.4	16.7	5.3	0.57	0.16
First week postpartum	66.1	376.3	0.87	10,996	71	21.4	6.1	1.3	0.3
Second week postpartum	68.9	389.8	0.88	9,931	70	23.6	5.25	1.33	0.2
Sixth week postpartum	68.7	378.5	0.91	6,940	56.1	35.2	8.96	1.5	0.4

*The number of cases in the First Trimester was too small to give a fair average

Tables II to VII inclusive deal with the treated cases. In this group we also included those so-called borderline cases which had low hemoglobin percentages and smears showing secondary anemia, but which had red cell counts of between three and one-half and four million. These tables are practically self-explanatory and need but little additional interpretation.

interesting factors between all the untreated cases and the treated cases. The percentage of primiparae and multiparae in both groups is practically identical so that the comparison is thus more accurate from this point of view.* In the untreated cases there were double the number with elevated blood pressure, most of whom were of the pre-eclamptic type,

TABLE II
AVERAGES OF BLOOD FINDINGS IN TREATED CASES BEFORE BEGINNING OF TREATMENT*

Groups According to Medication to Be Given	Hgb	Rbc	C I	Wbc	PMN	Lym	End	Eos	Bas	No Cases
Myeladon†	66.3	389.1	0.84	10,418	73.9	18	7.3	0.66	0.08	12
Neobovinine-20‡	71.7	380.1	0.95	10,303	71.7	17.5	9.4	1.19	0.29	13
Iron, Copper, Manganese, Calcium	67.1	366.6	0.92	9,876	70.7	20.8	7.5	0.85	0.10	17
Bland's with Arsenic and Strychnine	64.1	395.1	0.80	11,644	74.8	17.6	6.9	0.33	0.33	11
Liver and Iron	68	395.5	0.85	10,540	73.9	19.3	6.3	0.35	0.15	18
Ventriculin and Iron	66.6	373.1	0.89	10,000	73	18.4	7.9	0.70	0.04	18

*The dosage of these substances was as follows:

Myeladon—one tablespoonful t. i. d.
Neobovinine-20—one tablespoonful t. i. d.
Iron, Copper, Manganese, Calcium—2 tablets t. i. d.
Bland's with Arsenic and Strychnine—2 tablets t. i. d.
Liver and Iron—one teaspoonful t. i. d.
Ventriculin and Iron—10 to 20 grams daily

†Each fluid ounce contains

Super D cod liver oil (Upjohn) 120 minims
Glycerinated Extract Red Bone Marrow 10
Iron and Ammonium Citrate 4 grains
Malt extract qs

‡An original organic compound of liver extract and beef hemoglobin. Each tablespoonful contains the equivalent of 0.33 ounces of fresh whole liver.

The tables show that treatment definitely stops the downward curve during the second and third trimesters, particularly by raising the hemoglobin percentage. The recovery after delivery is more rapid, also, being somewhat more evident in the percentage of hemoglobin than in the red cell count, although the latter also is raised. It must not be forgotten that this improvement is evident despite the fact that the economic circumstances of these patients do not permit them the best possible care for their condition. The white blood cell count and the percentage of polymorphonuclear cells rise definitely during labor and remain high for the first few days after delivery, gradually returning to normal by the second week postpartum. As for the relative value of the various preparations used in this study, the tables again indicate clearly the results. The best preparation

and there were almost five times as many premature deliveries. These two factors probably account for the increased fetal mortality in the untreated cases. Labor was definitely longer in the untreated cases. Probably the most important difference between the two groups was the higher percentage of morbidity†, — in the untreated group, 27.9 per cent as against 11.2 per cent in the treated group. These are the infections which are so dangerous to the future health of the mother, and anything which will help to prevent them is certainly of great value in the care of the patient. We do not mean to imply by table VIII that anemia is the cause for the differences indicated therein. It

	Untreated (69 Cases)	Treated (89 Cases)
*p-impairae	32.2%	31.6%
Multiparae	67.8%	68.6%

†The criterion for morbidity was a rise in temperature for 24 hours to 100.4 F° or over.

TABLE III
EFFECT OF TREATMENT DURING THE SECOND TRIMESTER

Groups According to Medication Given	Hgb	Rbc	C I	Wbc	PMN	Lym	End	Eos	Bas	No Cases
Myeladol	68	343	1 00	9,582	71 5	20 4	7 6	0 92	0 25	12
Neobovinine-20	69 8	360 9	0 97	10,277	72 4	18 5	8 8	1 1	0 3	13
Iron, Copper, Manganese, Calcium	71 6	359 7	0 99	9,587	70 9	19 9	7 8	1 1	0 18	17
Blauds with Arsenic and Strychnine	72 4	377 1	0 96	11,364	70 6	12 4	10 7	0 8	0 16	11
Liver and Iron	70	370 2	0 94	9,772	73 1	17 3	6 3	1 1	0 11	18
Ventriculin and Iron	71 2	371 6	0 96	9,500	74 1	18 8	6 8	0 73	0 11	18
Untreated Cases	62 8	345 5	0 96	9,992	72 5	20 8	4 1	0 77	0 4	69

TABLE IV
EFFECT OF TREATMENT DURING THE THIRD TRIMESTER

Groups According to Medication Given	Hgb	Rbc	C I	Wbc	PMN	Lym	End	Eos	Bas	No Cases
Myeladol	68 3	347 3	0 99	10,740	72 6	20 9	4 6	1 1	0 14	12
Neobovinine-20	75 5	381 3	0 99	14,645	78 6	16 3	6 5	0 1	0 05	13
Iron, Copper, Manganese, Calcium	73 2	380 8	0 96	14,150	78	18 8	5 3	0 6	0 75	17
Blauds with Arsenic and Strychnine	73 2	416 5	0 88	16,200	79 4	12 4	7 8	0 3	8 18	11
Liver and Iron	70	387 5	0 91	18,661	83 1	11 6	4	0 5	0 13	18
Ventriculin and Iron	74	386 4	0 96	13,930	76 5	17 4	5 1	0 7	0 20	18
Untreated Cases	64 3	368 5	0 86	13,724	77 9	16 7	5 3	0 57	0 16	69

TABLE V
EFFECT OF TREATMENT THE FIRST WEEK POSTPARTUM

Groups According to Medication Given	Hgb	Rbc	C I	Wbc	PMN	Lym	End	Eos	Bas	No Cases
Myeladol	72	365 4	0 94	9,485	69 3	24 1	5 3	1 1	0 33	12
Neobovinine-20	76	401 3	0 95	10,766	69 7	17 3	6 7	1 2	0 20	13
Iron, Copper, Manganese, Calcium	76 5	386 6	0 99	10,133	67	24 6	8 2	1 5	0 23	17
Blauds with Arsenic and Strychnine	76 3	398 5	0 96	9,188	69 9	21 7	8 1	1	0 32	11
Liver and Iron	71 3	387	0 92	11,186	72 2	20 7	5	1 7	0 25	18
Ventriculin and Iron	75 9	392 7	0 97	9,225	64 8	26	6	1 4	0 28	18
Untreated Cases	66 1	376 3	0 87	10,996	71	21 4	6 1	1 3	0 3	69

TABLE VI
EFFECT OF TREATMENT THE SECOND WEEK POSTPARTUM

Groups According to Medication Given	Hgb	Rbc	C I	Wbc	PMN	Lym	End	Eos	Bas	No Cases
Myeladol	76	382 6	0 99	8,133	54 1	27 7	2 9	1 1	0 13	12
Neobovinine-20	76	402 4	0 95	9,583	64 7	22	6 9	1 9	0 40	13
Iron, Copper, Manganese, Calcium	76 5	392	0 99	8,321	68 9	29 4	6 8	2 1	0 32	17
Blauds with Arsenic and Strychnine	75 8	384 4	0 99	9,233	67 3	25 7	7 4	1	0 06	11
Liver and Iron	71 4	409 7	0 88	10,992	68 5	25 1	4 4	1 7	0 27	18
Ventriculin and Iron	77 2	384 3	0 90	8,991	60 3	30 7	7 3	2	0 09	18
Untreated Cases	68 9	378 5	0 98	9,940	70	23 6	5 25	1 33	0 2	69

TABLE VII
EFFECT OF TREATMENT THE SIXTH WEEK POSTPARTUM

Groups According to Medication Given	Hgb	Rbc	C I	Wbc	PMN	Lym	End	Eos	Bas	No Cases
Myeladol	72 6	400	0 91	10,360	62 2	30 3	5 7	1 3	0 17	4
Neobovinine-20	72	379	0 96	6,875	57 9	39 5	5 7	2	0 40	4
Iron, Copper, Manganese, Calcium	76 5	390 3	0 99	8,862	60 3	31 1	4 1	3 5	0 19	8
Blauds with Arsenic and Strychnine	76 2	394 4	0 96	8,540	60 9	36 8	8	3	0 25	5
Liver and Iron	71 8	392 1	0 92	8,650	55 2	37 8	5 4	1 1	0 57	6
Ventriculin and Iron	75 2	386 3	0 97	9,133	58 6	33	5 8	2 5	0 35	10
Untreated Cases	68 7	378 5	0 91	6,940	56 1	35 2	8 96	1 5	0 4	29

is known that a patient with lowered resistance is more liable to unfavorable complications during pregnancy, labor, and the puerperium. Therefore, it is fair to assume that any condi-

cluded under the head of such aggravating factors

TABLE VIII

COMPARISON OF VARIOUS FACTORS IN THE TREATED
AND THE UNTREATED CASES

	Untreated (69 Cases)	Treated (89 Cases)
Cases with systolic pressure above 140	4.9%	2.2%
Cases with systolic pressure below 100	48.9%	42.6%
Premature deliveries	4.9%	1.1%
Average length of labor		
Primiparae	22.8 hrs	15.6 hrs
Multiparae	13.4 hrs	11.1 hrs
Morbidity during puerperium	27.9%	11.2%
Maternal mortality	1.9%	0
Fetal mortality		
Premature	2.5%	1.1%
Full term (alive)	1.9%	1.1%
Stillborn (full term)	2.5%	1.1%
Average weight of babies	7.4 lbs	7.6 lbs

tion which tends to lower the patient's resistance may be considered an aggravating factor of such complications. And since anemia definitely lowers the patient's resistance, it must be in-

SUMMARY

- 1) Approximately 64 per cent of pregnant women develop anemia. This high average is the result of including the high percentage of anemic patients found in the late winter months. If this latter group be omitted from the average the per cent of patients with anemia falls to 43.
- 2) This anemia is progressive and is followed by a moderate spontaneous recovery after delivery.
- 3) Treatment improved the anemic condition, and made possible a more speedy recovery after delivery.
- 4) Routine examination of all pregnant patients for anemia is thus definitely indicated and appropriate treatment should be administered.
- 5) The relative success with various products in the treatment of these cases is shown.
- 6) There were more premature deliveries, a greater number of toxemias, a higher fetal mortality, a higher morbidity, and a longer labor in the untreated cases. We are not yet prepared to say positively what influence anemia and its treatment have upon these conditions.

BRONCHOSCOPY IN THE TREATMENT OF
PULMONARY ABSCESS AND BRONCHIECTASIS*

BY LOUIS H. CLERF, M.D.

BEFORE proceeding with bronchoscopy in the treatment of pulmonary abscess and bronchiectasis, one must bear in mind that its value is not entirely dependent on mechanical aspiration of pus. While drainage, considered in its broadest sense, is the most important part in treatment, a knowledge of etiological factors and other data is imperative to intelligently outline a plan of treatment. Bronchoscopy is helpful and in certain instances it is indispensable in securing this information.

Practically all the patients sent to the Bronchoscopic Clinic for treatment had been previously under medical observation for variable periods of time. Roentgen examination, repeated sputum studies and other necessary diagnostic procedures had been carried out. One

would therefore assume that a diagnosis of pulmonary abscess or bronchiectasis could be accepted and bronchoscopic aspiration instituted to supplement the general medical treatment. Experience, however, has shown that a diagnostic bronchoscopy is often indicated before arriving at final conclusions. A certain number of cases of pulmonary abscess involving a lower lobe, suggesting that they were nontuberculous in origin, have been diagnosed as tuberculosis on the basis of finding tubercle bacilli in the bronchoscopically removed secretion although repeated sputum studies had previously been negative. For that reason it is important to secure certain data before proceeding with a preconceived plan of treatment.

Pulmonary abscess—In our experience at the Bronchoscopic Clinic a history of surgical operation about the throat or mouth commonly performed under general anesthesia was elicited in over 60 per cent of the cases of pulmonary ab-

*Read before the Eastern Section of the American Sanatorium Association, Glenloch, N. J.

†Clerf, Louis H.—Professor of Bronchoscopy and Esophagus copy Jefferson Medical College, Philadelphia. For record and address of author see "This Week's Issue" page 1344.

secess In addition, a majority of the abscesses were monolobar and more than 50 per cent involved an upper lobe. This should suggest the possibility of aspiration as an etiological factor and should also indicate the need of ruling out a bronchial foreign body. Curiously, demonstrable foreign bodies in the bronchus are not commonly complicated by the development of abscess. The distinction *demonstrable* is used to distinguish these foreign bodies from microscopic particles of material which I believe can very readily be aspirated and ultimately set up a localized pneumonitis, often the forerunner of abscess or of bronchiectasis. This belief is further substantiated by the excellent results often secured by prompt bronchoscopic aspiration in pulmonary complications developing within a week or ten days after tonsillectomy, tooth extraction or other surgical procedure about the mouth or throat.

Bronchial neoplasms are occasionally complicated by pulmonary abscess particularly during the latter stages of the disease. It often is a terminal complication. In a certain number, however, the symptoms and clinical findings are typical of pulmonary abscess. Practically every thoracic surgeon has had the experience of operating on a case of pulmonary abscess which later was found to be secondary to cancer of the bronchus. Primary cancer of the bronchus commonly involves the larger bronchi and is therefore accessible to bronchoscopic inspection and biopsy. Although less frequent in occurrence, benign neoplasms, broncholiths and other forms of bronchial obstruction must be considered and should be ruled out by bronchoscopy. It would therefore seem advisable when planning the treatment of pulmonary abscess to secure all possible data concerning the etiology as well as the condition of the involved lung. This can best be obtained by close cooperation of the internist and roentgenologist with the bronchoscopist and surgeon.

In the treatment of pulmonary abscess communicating with a bronchus, success is dependent on adequate drainage. Among the important factors influencing drainage are location of the abscess, presence of mechanical obstructions, as granulation tissue or inflamed mucosa, and efficiency of cilia and cough. Posture, general medical measures and the exclusion of sedative mixtures will aid in improving drainage. Endobronchial obstructions must be removed mechanically. The decision to carry out a conservative plan of treatment without or with bronchoscopy or to resort to external surgical drainage should be arrived at by consultation. The patient who presents no clinical or roentgen evidences of retention of pus requires but conservative medical care. If there is fever with clinical and roentgen evidences of inadequate drainage, measures designed to improve this are indicated. Mechanical obstruction to

drainage may result from granulation tissue, inflamed mucosa and inspissated pus, or ciliary activity and cough may be impaired by the physical characters or the quantity of pus. These conditions can be remedied bronchoscopically.

How long should bronchoscopy be continued? In a procedure of this character there can be no rule applied as to the number of aspirations or the duration of the period of treatment. The progress of the disease as recorded by frequent roentgen examinations, the bronchoscopic findings, clinical observations and the quantity of pus expectorated, must be the determining factors. If there is no improvement in the physical signs or symptoms following several bronchoscopic treatments it does not necessarily follow that bronchoscopy should be discontinued. Often fever will persist and the physical signs remain unchanged for several weeks, the roentgen findings, however, may exhibit definite improvement. The clinical course of the disease should be the determining factor in a decision whether bronchoscopy should be continued or whether surgery should be resorted to. For that reason it is important to correlate all available data in arriving at conclusions. This can be accomplished only by close cooperation. It has been the custom at the bronchoscopic clinic to have weekly conferences between the internist, roentgenologist, bronchoscopist and surgeon for consideration of these cases.

Bronchiectasis presents innumerable difficulties both from the standpoint of diagnosis and treatment. I am convinced that the medical profession, as a whole, does not fully appreciate the serious nature of bronchiectasis. It is remarkable to note that there is little in the medical literature regarding the prognosis in these cases. It should be considered as a progressive disease in a majority of cases. It should also be noted that fatal complications and sequelae are not uncommonly observed in patients with bronchiectasis. In my experience there is no pulmonary lesion that presents the problems in diagnosis that are met with in suspected or early cases of bronchiectasis. This observation is made on the basis of reports received from a large number of competent physicians who have sent patients to the Bronchoscopic Clinic either for verification of a diagnosis or for treatment of bronchiectasis. It is, first of all, necessary to ascertain if bronchiectasis is present. If present, one should ascertain the extent of involvement, particularly if unilateral or bilateral. If unilateral, one should learn if one or more lobes are involved. It is also imperative to ascertain the presence or absence of obstruction. While much of this information can be secured by physical examination and roentgen study no thoracic surgeon would contemplate surgical treatment solely on these findings. It must be recalled that nontuberculous bronchiectasis usually involves lower lobe bronchi. It commonly

begins in the smaller bronchi, changes in the large bronchi are observed only in advanced cases. Cases of obstructive bronchiectasis are more often unilateral, bronchiectasis associated with suppuration of the nasal accessory sinuses is commonly bilateral.

The instillation of iodized oil has contributed more than any one factor in aiding the roentgenologist in the diagnosis of suspected cases of bronchiectasis. The method of instillation must be left to the discretion of the examiner. In order to be effective the oil must be delivered to that portion of the bronchial tree to be examined. The bronchoscopic method possesses obvious advantages over all others in that it permits of accurate placement of the iodized oil and also aids in securing data that can be obtained only by direct inspection of the interior of the larger bronchi. In all cases of obstructive bronchiectasis, final conclusions cannot be arrived at without diagnostic bronchoscopy.

The treatment of bronchiectasis is dependent on certain data acquired in the diagnostic studies. The best results by bronchoscopy are obtained in certain of the obstructive forms. In many of these the obstruction to the bronchus can be relieved bronchoscopically and aeration and drainage reestablished. It is a recognized fact that the structural changes in the walls of a dilated bronchus as well as in the peribronchial tissues cannot be materially altered by treatment. The dilatation is permanent and tends to increase, depending on the extent of the fibrotic changes. Measures directed toward improving drainage, preventing stagnation and building up the patient's bodily resistance are palliative and must be continued indefinitely to maintain the relief obtained. Postural drainage, bronchoscopy and certain conservative surgical procedures fall in this group. One of the

advantages of bronchoscopy is that secretions are more effectively removed, unfortunately, however, it cannot be practiced as often as postural drainage.

In the present state of our knowledge the only plan of treatment for a cure of bronchiectasis is surgical extirpation. This is practiced in unilateral cases although successes have been reported in those with bilateral involvement. The nonsurgical treatment consists of palliative measures, namely posture, bronchoscopy, bronchial irrigation, intratracheal medication, vaccine therapy, general hygienic care and removal of foci of infection in the upper air passages, e.g., diseased tonsils, and nasal sinus disease. In a certain number excellent results have been secured by these measures. This has been particularly noticeable in children. It has been frequently observed, however, that symptoms often recur following an acute upper respiratory infection with bronchial extension. It is believed that the greatest field of usefulness in the conservative treatment of bronchiectasis lies in treating the young.

The treatment of bronchiectasis, is, generally speaking, very unsatisfactory. A small group can be successfully treated by surgical means. A majority of the cases can hope for temporary benefit secured by palliative measures. Measures for the prevention of bronchiectasis should receive more attention. Prompt recognition and appropriate treatment of bronchial obstruction, so-called unresolved pneumonia, postoperative pulmonary complications, pneumonitis complicating acute infections, and nasal sinus infections associated with tracheobronchial symptoms will be productive of more benefit than all of our efforts to restore to normal function a dilated, tortuous, fibrous-walled bronchus surrounded by fibrous tissue.

A STUDY OF TEN YEARS' WORK AT THE PRENDERGAST PREVENTORIUM OF THE BOSTON TUBERCULOSIS ASSOCIATION

BY JOHN B. HAWES, 2ND, M.D.,* NATHANIEL L. K. WOOD, M.D.,* AND DONALD S. KING, M.D.*

FOR the past eleven years the Boston Tuberculosis Association has maintained a preventorium for children from the city of Boston who have been exposed to tuberculosis. As the city itself makes no provision for such children, this Association determined to meet this need, in part, at least. The cost of maintenance is a large part of our annual budget and is raised from private sources without help from city or state. As doubts have been expressed as to the wisdom of continuing this work, which in

terms of dollars and cents is a large liability, we have made the following study to ascertain from the present condition of the children who attended the Preventorium during the past decade, whether the time, strength and money spent were sufficiently justified by the results obtained and should be continued.

The Prendergast Preventorium consists of a well-equipped and homelike main building which includes dormitories for sixty boys and girls together with separate buildings, including a schoolroom, workshop, sleeping pavilions as well as a swimming pool, all located on a tract of sixteen acres of land on the outskirts of Boston. The requirements for admission are that

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each child shall be between seven and twelve years of age and must show definite contact with an open case of tuberculosis and have a positive von Pirquet reaction. In a few instances an intelligence test is required. There are no restrictions as to race, creed or color. The majority of these children are referred by the city tuberculosis clinics, a few come from other health or social agencies and a very few from private physicians. In what we call our "permanent beds" we have an average population of 35-40 children, the exact number depending on our budget, and during the two summer months we take in 75-100 more. The average length of stay of the resident children was 237 days and that of the summer camp children 67 days.

During the past ten years, including 34 children at the Preventorium on May 1, 1933, we have cared for 899 boys and girls. Of these 194 have been ruled out because of their short length of stay, leaving 705 children, 671 discharged and 34 in residence who form the basis of this study. There were 315 boys and 390 girls. Of the total number, 404 had been permanent residents and 301 members of the summer camp. All these children were born in this country but their parentage was widely diversified, 320 American, 121 Irish, 98 Italian, 36 Canadian, 27 Polish, among others. Of the 404 resident children, 57 had been admitted once, 14 twice, while one child had been admitted five times. Likewise, of the summer camp children, 53 had been re-admitted once and seven returned to the camp four times. This question of the re-admission of children to the Preventorium is a difficult and yet an important one to decide. On the whole, although the argument that the greatest good to the greatest number has its merits, we feel that it is better to try to do an intensive piece of work with fewer children than a poorer and inadequate job with many. Our records show that the benefits of re-admission are very definite and real, affecting not only the child but his parents and family. In many cases so extreme was the economic situation at home, that the temporary relief from responsibility of the child was of inestimable help to the tired, sick and discouraged parents. In addition, such re-admission brought about a much closer relation between our follow-up nurse and the child's family making possible improvements in the home situation that could not have been accomplished otherwise. We feel, therefore, that poor physical condition on the part of the child and an inadequate income at home are sufficient reasons for re-admission not only once but oftener if necessary to do a complete piece of work.

The physical condition of these 705 children on admission showed wide variations but all showed by x-ray definite evidence of tuberculous

infection. Two hundred and twenty-nine were manifestly in excellent condition in every way, 292, while well-developed, showed some signs of being undernourished, 91 were below par both in development and nourishment, while 68 were distinctly poorly developed and nourished. On discharge, with the exception of a very small group who went home against advice or who were discharged for the infraction of rules, all showed definite improvement, a point well confirmed by subsequent x-rays. Likewise, our records show that 90 per cent of the children who attended the Preventorium school were promoted, including a large number who had not done well in public schools prior to their admission. It was gratifying to note how rest, good food and fresh air along with new and attractive surroundings, individual attention, kindness and patience, awakened in the child an active interest to study and to learn.

An important and indeed an essential part of preventorium work is done after the child has left the institution. This consists in seeing that each child is under adequate medical supervision and is not lost sight of after discharge. This is done through an after care worker, in our case a nurse highly trained in this field. She visits each child in the home, sees that it reports regularly to the clinic or elsewhere for examination, and, of far greater importance, she obtains the cooperation of parents and other members of the family so that the training received at the Preventorium is not dropped. One of her duties, a most difficult and yet vital one, is to see that the original source of the child's infection is either eliminated altogether or reduced to a minimum, a difficult but not an impossible task. The thoroughness and efficiency of our own after care worker in this regard are shown by the fact that during this eleven-year period, out of 705 children only 29 cannot be traced, while only one has been known to have since died of tuberculosis. Nineteen children were admitted to sanatoria after leaving our Preventorium not because of the development of active tuberculosis but in the case of some as a preventive measure, beds in our own institution not being available, or with others because they had passed our age limit. At present, all but four of these have returned to their homes and to school in good condition. Two children out of 705 have since developed pulmonary tuberculosis and have had active sanatorium treatment. The following is the story of one of these.

This girl, twelve years old, was admitted to our Preventorium in very poor condition and remained 296 days, gaining twenty two and a half pounds. After her discharge, she was admitted to a sanatorium day school near her home which she attended for three years. In

addition to this she helped take care of an aunt, an active case of tuberculosis, as well as her mother who could not be persuaded to go to a sanatorium but who insisted on remaining at home, a constant source of infection. At the end of her third year in school, this girl was likewise found to have active tuberculosis and was admitted to a sanatorium where she remained for four years. In the meantime the aunt had died and the mother was finally taken to an institution. On her discharge, the girl was again referred to us and was at once admitted to our Sheltered Workshop where she has now been working three hours a day under close medical supervision for the past year and a half. At present she is in good physical condition in every way with her disease apparently arrested.

Constant and long-continued medical supervision as exemplified in this girl's case is essential to good results. Out of the total number of children included in this study 435 were found to be under good medical supervision, in 170 this was only fair, and in thirty-one it was inadequate or lacking. This group was made up of boys and girls in late "teen" age who flatly refused to go to a clinic or to consult a physician. Each appeared to be in good condition, however.

During the past year, 362 of the 636 children who had been discharged were x-rayed. Out of these, seventy suspicious cases were found, each of whom was given a careful physical examination. Of these children fifty-nine were in good condition, nine in only fair condition, while one child proved to have scoliosis and one a congenital heart. No child was found to have active tuberculosis. This group of seventy children will be watched with the greatest care.

The school records of the children discharged from our Preventorium show that up to May 1, 1933, 106 have completed high school, 158 are in high school at present, 314 are in grammar school and eighty-two left school when old enough to work. Of the 106 who graduated from high school and the eighty-two who left school, ninety-two were at work in the following fields: clerks, sales ladies, nurses, business college, doctor's assistant, chauffeur, electricians, salesmen, factory workers, companion, stenographer, mechanic, tailors, priest, nun, counsellor, maids. Five have married.

An important point in a study of this kind is to find out what has happened to those tuberculous individuals who were the original source of the infection from which these children contracted their disease. It was found that a large number of these, 65 per cent, had died previous to the child's admission to the Preventorium, and in many cases it was this that led to the discovery of the infected child. In 267 cases the source of infection had received sanatorium care. In this group precautions to prevent fur-

ther infection were fairly well carried out in the home. We were firmly convinced that our greatest problem would be with a group of 109 men and women who had received no sanatorium care, and yet much to our surprise the children coming from such homes were found to be in just about as good condition as those in other groups who had had no such prolonged exposure. We believe that it is fair to assume that this is largely due to the work of our follow-up nurse and her ability to bring about intelligent cooperation on the part of the family. This particular group is largely made up of the foreign element who do not understand the dangers of infection. It may very well be that by taking the child from such a home, opportunity for closer cooperation between the family and the nurse was given which could not have been brought about in any other way. In such families as these, slowly but surely the nurse gains the mother's confidence long before the child is discharged from the Preventorium. Then when the child finally returns home the basis for future work is laid. Then the nurse plans the child's daily routine, takes him to the clinic when necessary, helps to get aid from the city or elsewhere if needed, and arranges with clubs and settlement houses for special recreational and educational advantages. Likewise, besides her work with the individual child and family, she enlarges its scope to develop group activities for adults in these homes, such as cooking and sewing classes, family conferences, parents' meetings where talks on child care and hygiene and other topics are discussed. All this is initiated by the after-care nurse.

The following report is a typical example of the time and thought spent on one family in this way in order to safeguard the health of one Preventorium child.

A nine-year-old boy, pale, thin and sickly, was admitted to Prendergast and remained 120 days and was then discharged in good condition. In the meantime his father had died of tuberculosis so that the mother had had to break up her home and live with her parents, resulting in a thoroughly bad home situation. A small apartment was found for mother and son, the mother was well enough to go out to work and the boy, profiting by the lessons learned at the Preventorium, washed the breakfast dishes, swept the floors and made the beds. Through our nurse he attended the nutrition class at school and so had a suitable noon meal each day and after school hours joined a recreation group at a local settlement house which he attended regularly as well as its summer camp. At the present time his physical condition is good and he is examined and x-rayed regularly. His home is cheerful and happy and the future for him is bright.

What may one conclude from this summary of the results of ten years' work with children at our Prendergast Preventorium? Very little,

each child shall be between seven and twelve years of age and must show definite contact with an open case of tuberculosis and have a positive von Pirquet reaction. In a few instances an intelligence test is required. There are no restrictions as to race, creed or color. The majority of these children are referred by the city tuberculosis clinics, a few come from other health or social agencies and a very few from private physicians. In what we call our "permanent beds" we have an average population of 35-40 children, the exact number depending on our budget, and during the two summer months we take in 75-100 more. The average length of stay of the resident children was 237 days and that of the summer camp children 67 days.

During the past ten years, including 34 children at the Preventorium on May 1, 1933, we have cared for 899 boys and girls. Of these 194 have been ruled out because of their short length of stay, leaving 705 children, 671 discharged and 34 in residence who form the basis of this study. There were 315 boys and 390 girls. Of the total number, 404 had been permanent residents and 301 members of the summer camp. All these children were born in this country but their parentage was widely diversified, 320 American, 121 Irish, 98 Italian, 36 Canadian, 27 Polish, among others. Of the 404 resident children, 57 had been admitted once, 14 twice, while one child had been admitted five times.¹ Likewise, of the summer camp children, 53 had been re-admitted once and seven returned to the camp four times. This question of the re-admission of children to the Preventorium is a difficult and yet an important one to decide. On the whole, although the argument that the greatest good to the greatest number has its merits, we feel that it is better to try to do an intensive piece of work with fewer children than a poorer and inadequate job with many. Our records show that the benefits of re-admission are very definite and real, affecting not only the child but his parents and family. In many cases so extreme was the economic situation at home, that the temporary relief from responsibility of the child was of inestimable help to the tired, sick and discouraged parents. In addition, such re-admission brought about a much closer relation between our follow-up nurse and the child's family making possible improvements in the home situation that could not have been accomplished otherwise. We feel, therefore, that poor physical condition on the part of the child and an inadequate income at home are sufficient reasons for re-admission not only once but oftener if necessary to do a complete piece of work.

The physical condition of these 705 children on admission showed wide variations but all showed by x-ray definite evidence of tuberculous

infection. Two hundred and twenty-nine were manifestly in excellent condition in every way, 292, while well-developed, showed some signs of being undernourished, 91 were below par both in development and nourishment, while 68 were distinctly poorly developed and nourished. On discharge, with the exception of a very small group who went home against advice or who were discharged for the infraction of rules, all showed definite improvement, a point well confirmed by subsequent x-rays. Likewise, our records show that 90 per cent of the children who attended the Preventorium school were promoted, including a large number who had not done well in public schools prior to their admission. It was gratifying to note how rest, good food and fresh air along with new and attractive surroundings, individual attention, kindness and patience, awakened in the child an active interest to study and to learn.

An important and indeed an essential part of preventorium work is done after the child has left the institution. This consists in seeing that each child is under adequate medical supervision and is not lost sight of after discharge. This is done through an after care worker, in our case a nurse highly trained in this field. She visits each child in the home, sees that it reports regularly to the clinic or elsewhere for examination, and, of far greater importance, she obtains the cooperation of parents and other members of the family so that the training received at the Preventorium is not dropped. One of her duties, a most difficult and yet vital one, is to see that the original source of the child's infection is either eliminated altogether or reduced to a minimum, a difficult but not an impossible task. The thoroughness and efficiency of our own after-care worker in this regard are shown by the fact that during this eleven-year period, out of 705 children only 29 cannot be traced, while only one has been known to have since died of tuberculosis. Nineteen children were admitted to sanatoria after leaving our Preventorium not because of the development of active tuberculosis but in the case of some as a preventive measure, beds in our own institution not being available, or with others because they had passed our age limit. At present, all but four of these have returned to their homes and to school in good condition. Two children out of 705 have since developed pulmonary tuberculosis and have had active sanatorium treatment. The following is the story of one of these.

This girl, twelve years old, was admitted to our Preventorium in very poor condition and remained 296 days, gaining twenty-two and a half pounds. After her discharge, she was admitted to a sanatorium day school near her home which she attended for three years. In

prolonged, benefits are continued at the rate of one half the regular pay until disability ceases or death occurs

One might imagine that accidents and the disability for work due to them would be encouraged and prolonged under such a generous plan of benefits. They are not if properly controlled.

The plan is administered by a committee of five executives of the Company, responsible to the President. The members of the committee are themselves employees of the Company and beneficiaries under the plan when entitled to its benefits. The committee has both legal and medical advice upon its problem. Its decisions, based upon consideration of all evidence, facts, statements, opinions, information and claims pertaining to each case, are made in good faith and are final. Its policy is, I am sure, a very liberal one and in doubtful or borderline cases, the benefit of reasonable doubt favors the employee.

Recitation of a single case will serve as an example of the Company's policy in doubtful cases of accidental injury. A telephone pole broke off at the ground carrying a lineman working upon it to the ground with it. He landed in such a way that he acquired a fracture of the right scapula. He was hospitalized and treated by a competent surgeon and he apparently made an excellent recovery in a reasonable time. He was said to have had no other injury. He was examined for return to work, had recovered practically normal shoulder motion, had no symptoms of illness or disability, but was found to have a cardiac murmur. He was assigned to sedentary work. A month later, he was reexamined in the routine follow-up, and was observed to have a little dyspnea. Upon inquiry, he admitted some shortness of breath. He was again hospitalized under the care of a very prominent internist. A diagnosis of aortic insufficiency was established. No evidence of vascular disease, or rheumatism, or lues could be detected or found in the history. Lues was reported as the most likely causative factor and the internist declined to say that the accidental injury or the fall could explain the cardiac defect. Medical literature, so far as known, does not support such a theory of cause and effect as seen in this case. Yet the Benefit Committee accepted the presumption that this heart was just at the beginning of systole when the man struck the ground with force sufficient to fracture his scapula and at the same time to damage or even rupture a cusp of his aortic valve with, thereafter, progressive failure until death. Accident disability and death benefits amounting to \$7142 and medical expense of \$952 were paid by the Company.

It is interesting to recall that, during the last fifteen years at least, and without the protection

afforded by the Workmen's Compensation Law and Industrial Accident Commissions, no employee has prosecuted a suit against the Company because of his injury or allegedly unfair treatment. In some instances, as in the State of Maine, hearings have been held in order that the Commission may fix the degree of permanent impairment. No ruling by any commission has been disputed by the Company or held to be unfair.

There have been not more than two cases in fifteen years where allegedly injured employees were obliged to appear in person before the Benefit Committee in an effort to prove their claims. That is evidence of the satisfactory manner in which doubtful claims have been ironed out and disposed of by an understanding, sympathetic and rational discussion of the problem between the employee, his supervisors and the Medical Department before the matter is passed upon by the Benefit Committee.

I mention these facts because they indicate, I think, that the employees as a body, are reasonably well satisfied that the treatment accorded them under the benefit plan is just and fair and liberal.

In order that statistics upon lost time may be properly understood, it should be realized that, especially for men, there is a great variety of jobs at which temporarily and partially disabled men may be productively employed during the period of their lessened capacity and to know that splendid cooperation is extended by the management, by the employment supervisors and by the workmen to the Medical Department in this placement work. In this respect, we are probably favored above those industries wherein the variety of jobs is limited and probably favored over the insurance carrier who is defeated in his effort to restore a convalescent man to work when work would expedite his recovery.

Whatever statistics I may quote upon the results of different methods of surgical treatment of injuries represent only the experience in our Company and should not be interpreted as our opinion upon the efficiency of any particular method of treatment.

We are assured that in so far as management, the employment and other supervisors and the safety organization are aware and can arrange it, all accidental injuries, major and minor, are reported because the way has been made easy.

And finally, bear in mind, please, that the statistics which I will show and quote have been compiled by a statistical department entirely separate and apart from our Medical Department.

Now permit me to show a graph of the accident experience or incidence in the New England Telephone and Telegraph Company during the past ten years.

The chart* is cumulative, month by month for

*Chart I

we fear, that is definite and clear. It will not be until we have made a study of a similar group of children who have been exposed to tuberculosis but who have *not* had any preventorium experience and training and find out what has happened to them, that we can come to any justifiable conclusion as to the value of preventorium work. Certain facts, however, stand out, one especially, that out of 705 children exposed to tuberculosis and infected with that disease, only one child during a ten-year period has died of tuberculosis and only two have developed it in active or clinical form. There is the

fact, moreover, intangible but none the less evident, that the standards of living, health and happiness, not only of these children but of their families, have been markedly improved as a result of what these children have learned by example and by teaching at the Preventorium. This alone, we believe, fully justifies the money, energy and time spent on this work. On the whole, as a result of this ten years' study we are confirmed in our belief that the Preventorium is worth while and should be continued and is deserving of liberal support from the medical profession and the public.

THE MANAGEMENT OF INDUSTRIAL ACCIDENTS AFFECTING THE EMPLOYEES OF THE NEW ENGLAND TELEPHONE COMPANY*

BY D. L. LYNCH, M.D.†

MY first desire is to thank your secretary, Dr. William A. Rogers, for his kindness in inviting me to appear before you to-night. I regard it as a very great privilege.

It seemed to me that you might like to see, to look at or look down upon a so-called "Industrial Surgeon" or "Company Doctor", one of a group of probably normal men, much talked about and talked over, generously written up while unfavorably written about, criticized and even maligned, yet quite misunderstood, I am sure. We differ from you only in that our efforts and our services are devoted almost wholly to a special group of working people. We endeavor always to respect the rights and privileges of private practitioners and their patients.

It seemed to me, also, that it might be of interest to you who are particularly concerned with the treatment of accidental injuries to see what results may be achieved in the control of the accident problem in industry when management and workers together attack the problem sincerely and seriously, when the industrial surgeon is a part of the picture and when workmen's compensation laws, industrial accident commissions and other of the usual forms of compensation and insurance and their carriers are not a part of the picture, in other words, when the workers in an industry, executives and workmen together honestly endeavor to control both accidental injuries and compensation.

In order that my paper may be correctly interpreted, I wish to make a few introductory statements.

For many years I have had the honor of being associated, as a physician, with the New England Telephone and Telegraph Company, a

part of the Bell System. As surgeons who may have been or who yet may be called upon to care for an injured employee and very likely as holders of the Bell System's securities, you are undoubtedly interested in the affairs and successes of the Company.

The Company operates throughout all of New England except in Connecticut. It employs, on a yearly average, approximately 20,000 men and women. Our Medical Department is concerned in all the accident and health problems of this group of people throughout the territory.

The Company is a so-called self-insurer. Since January 1, 1913, it has maintained a non contributory plan for employees' pensions, accident and sickness disability benefits and death benefits. In the states where the Industrial Accident Act or Workmen's Compensation Law is not compulsory, as in Massachusetts, the Company cares for its injured employees under this benefit plan. Accident benefits under the plan are greater than compensation under the law. In other states, the Company has been privileged by the various industrial accident commissions to substitute the plan for the act, again because its benefits are the greater.

It is very important in this connection and when viewing our statistics on accident disability and lost time and compensation, to know of the greater benefits under the benefit plan than under the compensation law. There is no maximum payment under the plan. Any employee of the Company disabled by an accident arising out of and in the course of employment is entitled to benefits at the rate of his full pay, whether it be \$20.00 or \$50.00 or \$100 per week from the very first day of such disability for a period of thirteen weeks. That period is usually sufficient to restore the employee to some kind of work. Should disability, however, be

*Read before the Boston Orthopaedic Club November 13 1933.
†Lynch, D. L.—Medical Director New England Telephone & Telegraph Company. For record and address of author see This Week's Issue page 1344.

to avoid the death. We regret every one of them. That so many occurred will convince you, I am sure, that the work in which our men are engaged is not altogether free from hazards making for serious accidental injuries.

I am confident that this group of statistics substantiate my previous statement that the

would have caused lost time from work. It is not because injured men unfit for work have been required to work, but rather because education, mental hygiene, and pride in their performance have improved the whole attitude of these men toward the problem of accidents. When men who would otherwise lose their pay

NEW ENGLAND TEL AND TEL CO ENTIRE PLANT DEPARTMENT

CUMULATIVE NUMBER OF MONTHLY LOST TIME ACCIDENTS

1924	*34	74	*110	148	181	220	264	299	330	372	414	***454
1925	21	42	74	99	118	*129	135	149	160	174	185	*192
1926	13	18	24	34	41	53	60	74	85	91	101	111
1927	*17	22	47	65	78	*86	*98	112	122	143	158	***170
1928	12	21	*33	44	56	67	*75	96	104	117	124	**139
1929	**10	23	28	34	39	49	55	*63	71	80	89	****103
1930	14	20	26	36	42	*56	66	*74	79	87	93	**101
1931	12	23	30	*38	40	*45	*50	52	60	67	*72	****76
1932	7	12	*16	*18	20	24	25	30	32	32	34	**36
1933	0	2	2	3	4	9	11	14	16			

CUMULATIVE NUMBER OF MONTHLY NO LOST TIME ACCIDENTS

1924	393	649	994	1299	1577	1876	2226	2526	2807	3084	3329	3576
1925	267	469	728	966	1195	1431	1656	1853	2082	2318	2557	2820
1926	295	598	949	1212	1532	1789	2021	2218	2390	2571	2749	2938
1927	192	339	541	688	832	1021	1172	1320	1489	1697	1901	2093
1928	219	427	645	878	1123	1371	1655	1913	2128	2359	2587	2859
1929	274	486	735	989	1294	1572	1869	2102	2344	2611	2808	3030
1930	289	515	794	1042	1302	1577	1803	2036	2259	2453	2627	2823
1931	193	337	535	703	913	1101	1305	1457	1611	1790	1936	2072
1932	154	305	480	619	764	901	1023	1182	1298	1409	1485	1577
1933	84	169	272	387	474	572	640	734	831			

CUMULATIVE NUMBER OF MONTHLY LOST DAYS DUE TO ACCIDENTS

1924	625	1182	2045	2855	3777	4514	5270	6065	6908	7758	8473	9203
1925	648	1148	1737	2242	2674	2928	3197	3501	3786	4110	4452	4849
1926	312	679	1117	1581	2047	2595	3059	3513	4033	4517	4967	5547
1927	483	941	1559	2292	3096	3784	4306	4732	5067	5453	5955	6418
1928	483	859	1373	1805	2176	2513	2814	3140	3476	3799	4040	4221
1929	313	684	1025	1274	1511	1696	1879	2151	2435	2797	3114	3482
1930	427	848	1312	1798	2155	2462	2895	3225	3521	3798	4076	4367
1931	496	960	1365	1779	2146	2479	2736	2953	3137	3358	3603	3918
1932	332	680	1016	1259	1404	1543	1678	1863	2105	2359	2530	2657
1933	104	242	409	507	602	781	982	1211	1347			

*Fatal Cases

CHART III

liberal accident disability benefit plan of the Company has not encouraged lost time due to accidents.

I have heard it said that lost time accidents are reduced in number, to some extent at least, because the "hard-boiled industrial surgeon" requires injured men to work who should be at rest at home. That is not so. If it were true and if practically all accidents are properly reported, as I am assured, the number of *no lost time* or minor accidents should be affected, either increased, or stabilized. Let's examine the record.

Section 2 of Chart III reveals that *no lost time* or minor accidents involving Plant Department men have declined from 3576 in 1924 to 831 thus far in 1933. It represents a reduction of 76.5 per cent in the number of minor accidents.

Unquestionably, the count of minor accidents in the recent years includes cases that earlier

will report for work in spite of a minor injury acquired at home or at play, lost time from the same or similar injuries acquired at work must stop if the men are as fair and reasonable as telephone men.

Chart III also reveals, in the third section, the number of calendar days lost from work each month and each year by reason of disabling accidents. It shows that the number of such days progressively decreased from 9203 in 1924 to 1347 for nine months of this year, a decrease of 85.4 per cent. And so the trend of lost time has been definitely downward, indicating a decrease in the severity as well as in the number of accidents.

But this tabulation of lost days is deceptive. It does not follow that because there have been only sixteen disabling accidents involving our men and 1347 lost days that the severity rate was eighty-five days. That would indicate severe injuries and prolonged disability. The fact is that

each year. Notice the monthly step-up from January to December in 1924. In that year there occurred a total of 583 lost time or totally disabling accidents. Of this number, 454, represented on the chart by the heavy black dots, occurred to workmen in the Plant Department, the men who perform manual work and who encounter real hazards above the ground on poles, ladders and buildings, on the ground in congested streets, in automobiles and trucks, in

the number of men has been reduced during the recent four lean years of depression.

Chart II shows the accident experience upon a ratio or frequency basis. It reveals a consistent drop from 4.43 accidents per 100 men in 1924 to 2.25 per 100 men during the nine months of this year. And our men have been doing the same manner of work throughout the decade.

Chart III, in its upper section, reveals numerically the accident experience shown graphically

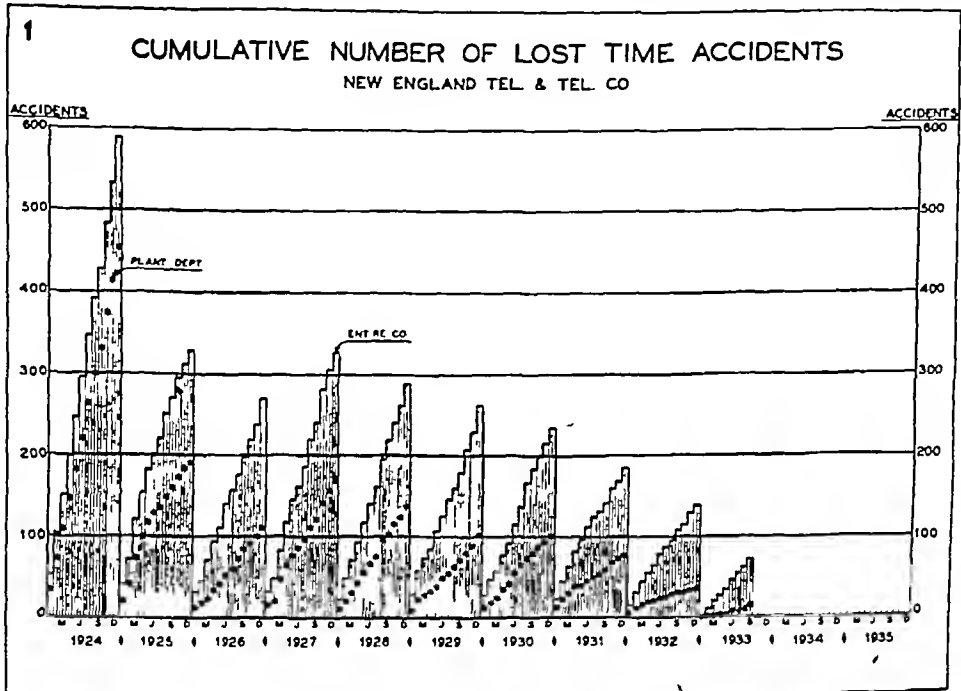


CHART I

basements and dark cellars and below the ground in manholes and trenches. The remainder of the total number involved supervisors and office workers, chiefly young women telephone operators.

Note that there has been a progressive, almost steady decline in the number of accidents among both groups of employees during the ten-year period and that for nine months of the current year, the total has dropped to 70, of which only 16, represented by the heavy dots, occurred in the group of nearly 7000 Plant Department men. That represents a decrease of 96.4 per cent in serious accidents among men in the past ten-year period.

I like that chart because it reveals more than a numerical reduction in serious accidents. It visualizes for me the cooperative spirit and effort of management and men to eliminate the pain and the suffering and the anxiety that follow on accidents and to enable these men to return home from work uninjured and unimpaired.

Now it may be imagined or even suggested that the number of accidents declined because

cally in Charts I and II. The asterisks in the last column inform you of the number of men, 21 in all, who were fatally injured or killed

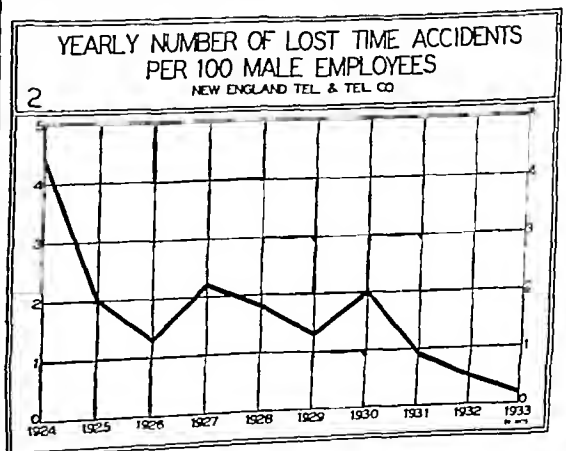


CHART II

in the ten-year period. Some of these deaths were immediate, as by electrocution. Before the others occurred, every possible effort was made

to avoid the death. We regret every one of them. That so many occurred will convince you, I am sure, that the work in which our men are engaged is not altogether free from hazards making for serious accidental injuries.

I am confident that this group of statistics substantiate my previous statement that the

would have caused lost time from work. It is not because injured men unfit for work have been required to work, but rather because education, mental hygiene, and pride in their performance have improved the whole attitude of these men toward the problem of accidents. When men who would otherwise lose their pay

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each year. Notice the monthly step-up from January to December in 1924. In that year there occurred a total of 583 lost time or totally disabling accidents. Of this number, 454, represented on the chart by the heavy black dots, occurred to workmen in the Plant Department, the men who perform manual work and who encounter real hazards above the ground on poles, ladders and buildings, on the ground in congested streets, in automobiles and trucks, in

the number of men has been reduced during the recent four lean years of depression.

Chart II shows the accident experience upon a ratio or frequency basis. It reveals a consistent drop from 4.43 accidents per 100 men in 1924 to 2.25 per 100 men during the nine months of this year. And our men have been doing the same manner of work throughout the decade.

Chart III, in its upper section, reveals numerically the accident experience shown graphically

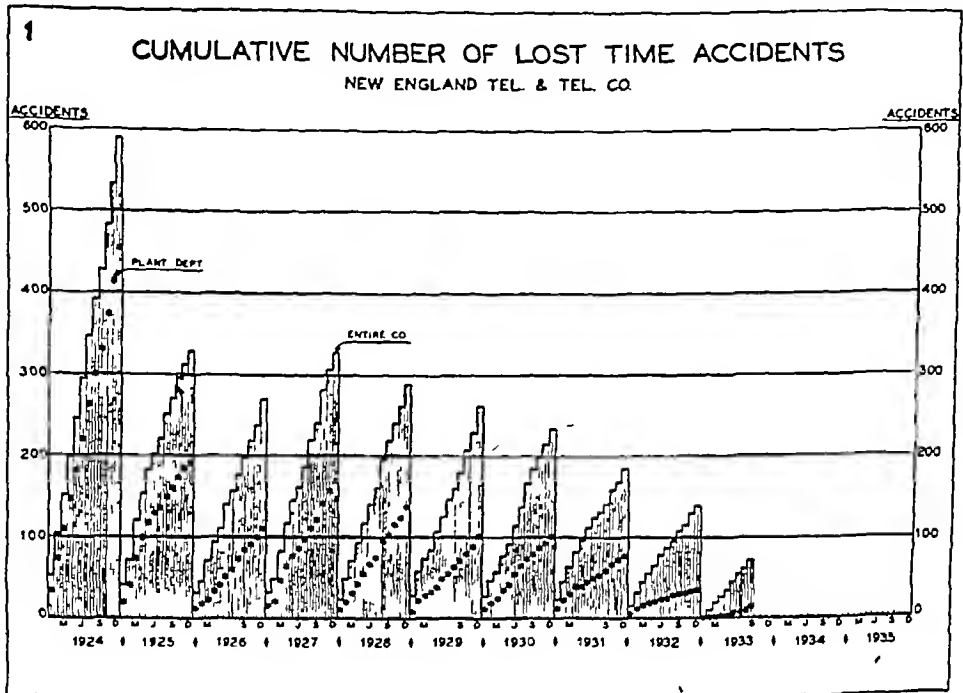


CHART I.

basements and dark cellars and below the ground in manholes and trenches. The remainder of the total number involved supervisors and office workers, chiefly young women telephone operators.

Note that there has been a progressive, almost steady decline in the number of accidents among both groups of employees during the ten-year period and that for nine months of the current year, the total has dropped to 70, of which only 16, represented by the heavy dots, occurred in the group of nearly 7000 Plant Department men. That represents a decrease of 96.4 per cent in serious accidents among men in the past ten-year period.

I like that chart because it reveals more than a numerical reduction in serious accidents. It visualizes for me the cooperative spirit and effort of management and men to eliminate the pain and the suffering and the anxiety that follow on accidents and to enable these men to return home from work uninjured and unimpaired.

Now it may be imagined or even suggested that the number of accidents declined because

cally in Charts I and II. The asterisks in the last column inform you of the number of men, 21 in all, who were fatally injured or killed

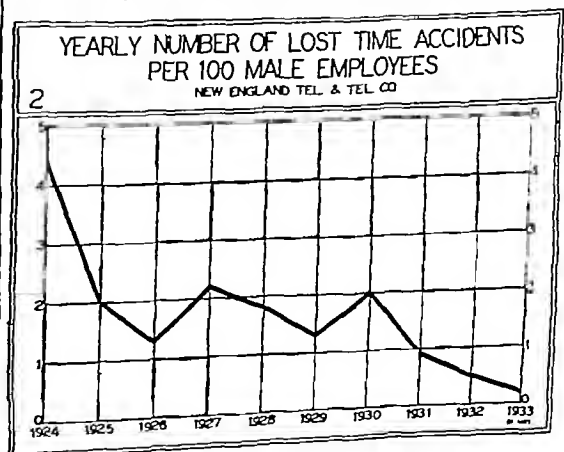


CHART II.

in the ten-year period. Some of these deaths were immediate, as by electrocution. Before the others occurred, every possible effort was made

to avoid the death We regret every one of them That so many occurred will convince you, I am sure, that the work in which our men are engaged is not altogether free from hazards making for serious accidental injuries

I am confident that this group of statistics substantiate my previous statement that the

would have caused lost time from work It is not because injured men unfit for work have been required to work, but rather because education, mental hygiene, and pride in their performance have improved the whole attitude of these men toward the problem of accidents When men who would otherwise lose their pay

NEW ENGLAND TEL AND TEL CO ENTIRE PLANT DEPARTMENT

CUMULATIVE NUMBER OF MONTHLY LOST TIME ACCIDENTS

1924	*34	74	*110	143	181	220	264	299	330	372	414	***454
1925	21	42	74	99	113	*129	135	149	160	174	185	*192
1926	13	18	24	34	41	53	60	74	85	91	101	111
1927	*17	22	47	65	78	*86	*98	112	122	143	158	***170
1928	12	21	*33	44	56	67	*75	96	104	117	124	*139
1929	**10	23	28	34	39	49	55	*63	71	80	89	****103
1930	14	20	26	36	42	*56	66	*74	79	87	93	*101
1931	12	23	30	*38	40	*45	*50	52	60	67	*72	****76
1932	7	12	*16	*18	20	24	25	30	32	32	34	*36
1933	0	2	2	3	4	9	11	14	16			

CUMULATIVE NUMBER OF MONTHLY NO LOST TIME ACCIDENTS

1924	393	649	994	1299	1577	1876	2226	2526	2807	3034	3329	3576
1925	267	469	728	966	1195	1431	1656	1853	2032	2318	2557	2820
1926	295	598	949	1212	1532	1789	2021	2213	2390	2571	2749	2938
1927	192	339	541	688	832	1021	1172	1320	1489	1697	1901	2093
1928	219	427	645	878	1123	1371	1655	1913	2128	2359	2587	2859
1929	274	486	735	989	1294	1572	1869	2102	2344	2611	2808	3030
1930	289	515	794	1042	1302	1577	1803	2036	2259	2453	2627	2823
1931	193	337	535	703	913	1101	1305	1457	1611	1790	1936	2072
1932	154	305	480	619	764	901	1023	1182	1298	1409	1485	1577
1933	84	169	272	387	474	572	640	734	831			

CUMULATIVE NUMBER OF MONTHLY LOST DAYS DUE TO ACCIDENTS

1924	625	1182	2045	2855	3777	4514	5270	6065	6908	7768	8473	9203
1925	648	1148	1737	2242	2674	2928	3197	3501	3786	4110	4452	4349
1926	312	679	1117	1581	2047	2595	3059	3513	4033	4517	4967	5547
1927	433	941	1559	2292	3096	3784	4306	4732	5067	5453	5955	6418
1928	433	859	1373	1805	2176	2513	2814	3140	3476	3799	4040	4221
1929	313	684	1025	1274	1511	1696	1879	2151	2435	2797	3114	3432
1930	427	848	1312	1798	2155	2462	2895	3225	3521	3798	4076	4367
1931	496	960	1365	1779	2146	2479	2736	2953	3137	3358	3603	3918
1932	332	680	1016	1259	1404	1543	1678	1863	2105	2359	2530	2657
1933	104	242	409	507	602	781	982	1211	1347			

*Fatal Cases

CHART III.

liberal accident disability benefit plan of the Company has not encouraged lost time due to accidents

I have heard it said that lost time accidents are reduced in number, to some extent at least, because the "hard-boiled industrial surgeon" requires injured men to work who should be at rest at home That is not so If it were true and if practically all accidents are properly reported, as I am assured, the number of *no lost time* or minor accidents should be affected, either increased, or stabilized Let's examine the record.

Section 2 of Chart III reveals that *no lost time* or minor accidents involving Plant Department men have declined from 3576 in 1924 to 831 thus far in 1933 It represents a reduction of 76.5 per cent in the number of minor accidents

Unquestionably, the count of minor accidents in the recent years includes cases that earlier

will report for work in spite of a minor injury acquired at home or at play, lost time from the same or similar injuries acquired at work must stop if the men are as fair and reasonable as telephone men

Chart III also reveals, in the third section, the number of calendar days lost from work each month and each year by reason of disabling accidents It shows that the number of such days progressively decreased from 9203 in 1924 to 1347 for nine months of this year, a decrease of 85.4 per cent And so the trend of lost time has been definitely downward, indicating a decrease in the severity as well as in the number of accidents

But this tabulation of lost days is deceptive It does not follow that because there have been only sixteen disabling accidents involving our men and 1347 lost days that the severity rate was eighty-five days That would indicate severe injuries and prolonged disability The fact is that

lost days are carried forward from month to month and year to year from the day of each accident as long as its resulting disability continues. Thus the figure of 1347 includes lost days in 1933 by men who were injured in 1932, in 1931 and in 1930.

I regret that there is a feeling prevalent among medical men that we "industrial surgeons" transgress the rights of private physicians by treating many industrial accident injuries. Again, I fear that some surgeons have felt that their work, or what they formerly did for industry, has been lessened or detoured by the company doctor who shunted injured men to his personal or intimate friends.

Of course I can speak only for my department, but I submit that the three charts I have shown make such ideas out to be utterly false. The fact is, as you can plainly see, that the volume of work no longer exists for anybody to do.

If similar conditions prevail in industry generally, I am confident that you will agree that we fellows did not steal your business. It simply isn't there.

It is true, that the "industrial surgeon" has played a part in reducing the number and in minimizing the severity of accidental injuries. But surely he should not be criticized or condemned because he has tried to prevent needless human suffering. You all do that very thing just as often as you can.

The story behind this satisfactory accident experience would take too long for telling. Suffice it now to say that it is the result of teamwork between the management of the Company, the safety and first aid organization, the employment supervisors, the workmen's organization (the International Brotherhood of Telephone Workers), the improved attitude of the workmen themselves toward the problem, and the Medical Department.

The medical contribution consists chiefly,—

1 In the examination of applicants for work wherein an attempt is made to select the proper type of man for the job specified.

2 In follow-up examinations to be assured that newly engaged men have overcome the correctable impairments detected at the pre-employment examination.

3 In a thorough examination, physical, neurological and not infrequently mental of employees who have been injured, followed by a work reassignment of the man whose uncorrectable impaired condition caused or contributed to the accident.

4 In the examination of employees who have been absent from work for seven days for any health reason. Such examinations are, generally speaking, more fruitful than periodic health examinations.

5 In the examination of employees observed or properly suspected by their supervisors or

by the safety organization of being careless or in an unsatisfactory health condition.

Such examinations are frequently exhaustive, and may include a test of vision, a neurological check-up, frequently x-ray, and almost always a blood Wassermann. Not infrequently they delve into the social condition to uncover possible psychological causes of accidents.

6 In the periodic reexamination and encouragement of employees who have been seriously injured until they admit recovery and for an extended period thereafter.

7 In the insistence by the Medical Department, in so far as possible, that the injured employee remain with or under supervision by the doctor who first cared for the injury. Experience indicates that the migratory patient does badly and the variety of opinions and advice that he picks up delay his progress as barnacles slow down a ship.

8 In a policy of definite but sympathetic firmness that an injured employee must return to work within his capacity as soon as he is able, or at once if the injury is not severe, because it is good for his mental health, for his morale and for the morale of his home. This policy of the Medical Department has been made workable by the splendid cooperation of the employment supervisors, who have found ways and means to place such employees, usually productively. It cannot but prevent many neuroses.

9 In the instruction by the safety organization of all male employees in adequate first aid to the injured. The American Red Cross has awarded certificates for first aid to upwards of 7000 men of the Company. Immediate adequate first aid cannot but minimize the severity of many injuries. We have not had in Boston a real septic hand for five years.

10 In what we believe to be prompt and adequate examination and treatment by or under the supervision of our Medical Department for the majority of accidental injuries.

If these practices of industrial medicine have contributed anything toward the reduction in the number and in the severity of accidents, we are glad of it, and we know that it is unjust to censor us even though the volume of work for private practitioners may be lessened.

Chart IV is an illustration upon an employee ratio basis of the yearly reduction in serious and lost time accidents involving both men and women employees during the last decade. It indicates a progressive reduction during that period for men, for women and for the total of the two groups from 22 per 100 employees in 1924 to 4 per 100 employees in 1933.

Chart V may be of particular interest to those of you who are especially concerned with compensation. It is my understanding that coverage in industry is based upon the hazards involved and upon a percentage of the payroll. I do not know whether Mr. Parks and Mr. Mars-

ton would consider the percentage of Company payroll in this instance, which includes all compensation paid to injured employees and all expense for treatment high or low. I show it because I think it is interesting. It shows a progressive reduction in accident expense from \$85,925 in 1924 to \$21,804 this year. In my opinion, it is a favorable showing. It shows a

YEARLY NUMBER OF LOST TIME ACCIDENTS PER 100 EMPLOYEES

NEW ENGLAND TEL. & TEL. CO

Year	Male Employees	Female Employees	All Employees
1924	4.4	8	2.2
1925	2.0	8	1.3
1926	1.3	1.0	1.0
1927	2.2	1.1	1.4
1928	1.8	1.0	1.3
1929	1.3	1.1	1.1
1930	2.0	.9	1.0
1931	.9	.8	.8
1932	.5	.8	.7
1933	.2	.5	.4

(9 mos.)

CHART IV

ACCIDENT DISABILITY BENEFITS AND TREATMENT EXPENSE

NEW ENGLAND TEL. & TEL. CO

Year	Disability Benefits	Treatment Expense	Combined Benefits and Expense Amount	% of Payroll
1924	\$54,623	\$31,302	\$85,925	2.6
1925	35,501	29,201	64,702	1.8
1926	33,651	27,752	61,403	1.7
1927	40,053	31,007	71,060	2.1
1928	33,822	25,034	58,856	1.7
1929	27,920	19,958	47,878	1.3
1930	35,951	36,108	72,059	1.9
1931	31,358	29,719	61,077	1.7
1932	23,213	18,875	42,088	1.3
1933	14,044	7,760	21,804	1.0

(9 mos.)

CHART V

drop in per cent of payroll from 2.6 in 1924 to 1.0 this year.

The chart shows something else that is very interesting, that is, treatment expense, or the sums paid to private doctors, dentists, hospitals, nurses, etc., for the treatment of injured employees.

Please note that in one year such expenses exceeded the sum paid to injured employees, that it closely approached it elsewhere and that it has always been relatively high. Please bear in mind that the sum in any year may include an expense incurred in a previous year but delayed in billing and that an average cost based on the yearly number of cases is not justified.

I wish now to lay particular emphasis upon the fact that our Company has no quarrel with

doctors' bills that apply to legitimate accidents. I have the privilege of approving these bills for payment, and I have nothing but respect for the fairness with which charges against our Company are made. Seldom is the Company used as a Christmas tree, and I can recall only four medical bills in fifteen years that were disputed. I can recall a greater number where we felt it proper to tell the doctor that he was cheating himself, that the employee's condition and recovery entitled him to a greater fee, and that he could and should increase his charge.

Of course it has happened, and it probably will occur again, that a particular bill cannot be paid by the Company because the Benefit Committee is unable to find that the treated employee's condition was the result of an accident arising out of and in the course of employment. I repeat what I said before, that the policy of the Benefit Committee for the Company is a liberal one but it is not wasteful, nor does it accept extravagant claims. It rejects them. Unfortunately, the doctor concerned in such a case is acquainted only with the patient's story, not with all the facts, and unfortunately, too, feels hurt when the Company fails to pay up.

I am confident that medical charges under the Workmen's Compensation Law would be less annoying to all concerned if all the bills could be passed upon by a medical person able to visualize the character and extent of injury, the type and extent of surgery and treatment involved, to appreciate the purpose of doctors generally to do the right thing, and to realize that peace of mind for the injured person is essential to recovery. Scolding and quarrelling about a medical bill, even a hospital private room fee or an extra visit, does not help the patient to get well.

We realize that our injured fellow workers should have adequate and really good medical service and we feel that they get it. The Company is willing to pay accordingly when the accident is bona fide.

I have in mind a surgeon's bill for \$750 for two laparotomies upon an injured employee which we were glad to pay. The man recovered and eventually resumed his regular work.

I have in mind a medical expense of \$5966.87 incurred and paid on account of a lineman who alleged that a month before he developed a subpectoral abscess, he acquired a splinter under his thumb-nail while at work.

Chart VI lists a limited number of vertebral body fractures, compression fractures that occurred in a five-year period, and indicates the number of calendar days lost from work in each case. There is a total of ten cases arranged by the number of calendar days lost from work in each case. The average lost time per case was 122.2 days.

All of them were treated conservatively. All of them, except No 10, were treated either by a member of our medical staff or by a selected orthopedist. The compression fracture in No 4 was complicated by a serious hypertension, in No 8 by a fractured os calcis, in No 7 there were two separate fractures, a cervical and a lumbar, No 6 had been operated upon for carcinoma of the tongue sixteen months earlier. He did not have a metastasis in the spine, thank

COMPRESSION FRACTURES OF VERTEBRAE

Case No	Days of Disability	Case No	Days of Disability
1	38	6	118*
2	92	7	141*
3	93	8	144*
4	110*	9	185
5	116	10	187
Total days lost from work			1224
Average days per case			122.4

*Fatal Cases

CHART VI

Heaven. He is to day apparently well. No 9 was complicated by an annoying deficiency disease, and we purposely delayed his return to work. No 5 is a man of most peculiar and suspicious make-up, and we were fortunate to return him to work when we did. Otherwise, I am afraid he would be permanently disabled. He remains steadily at work.

In case No 3, occurring in a distant city, the orthopedist who instituted treatment proposed a fusion. That operation has not recommended itself to us, and we interfered, preventing it. Apparently the man made a good recovery from his accident, now three years past, and returned to work. I saw him a month ago and he is in good condition.

I wish here to thank Dr. William A. Rogers, and also Dr. B. A. Godvin, of our staff, for these results.

I do not wish to imply that these injured men upon their return to work immediately resumed full duty as linemen or cable splicers, or what not. I mean that they returned to gainful occupation, to a daily routine, in an average of 122 days, thus avoiding neuroses, psychoneuroses, defeatism and all the other mental ills that result from prolonged idleness.

It is our policy to decide against line work or the climbing of telephone poles when a man has had a fracture of a vertebral body. Generally, however, these men prefer to return to that work and eventually do so. No 8, in spite of his fractured vertebra and os calcis, is climbing telephone poles, and No 7, in spite of two fractures, is climbing telephone poles.

Since January 1, 1932, we have encountered 126 allegedly injured backs without fractures

among our Plant men. These injuries resulted from falls, long and short, strains in lifting or pulling, or other exertions, blows from falling or swinging objects, automobile accidents, etc. They include the usual types of muscle and lumbosacral and sacro-iliac strains. Many of them were unimportant, some of them were mild, some of them were not injuries in reality, but rather lumbago or other evidences of arthritis and one was of pain due to a large stone in the kidney. Out of this number of 126 allegedly injured men, only three men have lost any time from work, one for forty days, one for nineteen days, and one for twelve days, an average lost time of twenty-four days per case for that group. It is true that a number of these men were temporarily placed upon limited or restricted duty, but they were kept occupied, and I am sure they felt better and were better for it.

We do not suggest that a similar performance is to be expected immediately from all men everywhere reporting back strain. It takes time and example to convince them of the benefit of some form of occupation as good therapeutics, it takes time and patience to mould their psychology favorably, and we doctors must learn from such performances that not every alleged or trivial back strain requires or justifies adhesive strapping and a long rest. If we can do our work in spite of a little backache, our patients should do likewise.

Time did not permit me to tabulate the total number of back injuries to women in the Company since January, 1932. Of course we have many such injuries because telephone girls will slip on waxed floors and trip over their telephone cords and they will fall downstairs.

I have, however, a record of ten, all the back injuries in women that caused lost time since January, 1932. The longest period of absence was twenty-nine days, the shortest one day, and the average fifteen days. They were the usual run of cases and our staff, generally Dr. Godvin, treated most of them.

About three years ago, a young woman who slipped on a tiled floor fell and apparently received a sacro-iliac strain. She had her private physician who notified us that he was through with the case within a month because he believed that she exaggerated her symptoms. We attempted to help her but soon found ourselves defeated when we discovered that she was being advised and controlled by a nurse. We lost patience with her, I am sorry to say. She employed a private surgeon. She had a fusion two and one-half years ago, and she has made no progress whatever toward recovery of working ability. She still complains of pain in the back. I repeat that the operation of fusion has not recommended itself to us.

May I now show you on the last chart No

VII, the result of treatment in nine accidental injuries resulting in fractured ossa calces. These men fell or jumped from telephone poles or from a staging.

FRACTURES OF THE OSSA CALCIS

Arthrodesis		Manipulation and Impaction	
Case No	Days of Disability	Case No	Days of Disability
1	241	5	114
2	234	6	91
3	325	7	100
4	185	8	144
		9	174
Total days	985	Total days	623
Average per case	246	Average per case	124

CHART VII.

Nos 1, 2, 3 and 4 were treated privately, either because they reported immediately to a private physician or were removed to a nearby hospital. This group was treated by open operation. The average days lost per case were 246.

Nos 5, 6, 7, 8 and 9 were similar cases in which we were able to institute or engage treatment. None of them had open operation, rather they had manipulation and impaction under ether. No 5 had fractured both ossa calces, No 9 had fractured both ossa calces, both men falling from telephone poles, and No 8 also had a vertebral compression fracture. The average days per case lost from work in this group were 124.

None of the first group of men have ever been able to return to work as linemen. Four of the second group are climbing and I hope the last one, a fairly recent case, will be able to do so.

Of course, no two fractures may be exactly alike and the same treatment may not be best suited for all cases. But a fractured os calcis is a fractured os calcis and you may take this picture for what it is worth.

It was my feeling that injured backs and fractured heels would interest you. Whether our management of these annoying problems is good or bad as compared with the results obtained by other men, I do not know. I told about them because they are problems, but I do know that no telephone man who had a fracture in his spine or who strained or otherwise injured his back or who broke his heels is permanently disabled for work, or ever was pensioned or fired from work, because of incapacity or of inability to do some work. And with only two exceptions, all telephone men who have ever been injured by reason of an accident arising out of and in the course of employment and who survived are earning to-day as much as they did before the accident or more. Only one man is perhaps permanently disabled. He was past sixty-two years of age and had Parkinson's disease when he slipped on a stairway without physical or serious injury, but his preëxisting pronounced disability was considered aggravated by the fall. That is liberal treatment of a high order.

Only two women who have been injured within the last twenty years failed to return to work. One of these has been disabled for four years. She is a mental problem. The other is the sacro-iliac case, now absent from work thirty-five months. I hope they, too, will recover working ability.

Such, then, are the results, good or bad, of an experience wherein the problems of industrial accidents are controlled by the industry itself and when education, fair and just treatment have developed cooperation, right thinking and a helpful responsive attitude on the part of the employees of that industry.

ARTIFICIAL LIGAMENTS AT THE KNEE

A Technique

BY FREDERIC JAY COTTON, M.D.,* AND GORDON MACKAY MORRISON, M.D.*

RUPTURES of lateral ligaments or ruptured crucials at the knee have engendered a vast deal of literature.

*First, as to the ruptured crucials, the diagnosis is at least difficult, and with even one lateral gone there is enough free play to make the crucials suspected. There is a good deal of reason to feel that with the laterals intact or restored, perhaps ruptured crucials may not be very important. Then, too, any direct attack on the crucials must do some harm and be of doubtful mechanical stabilizing effect.

Of the indirect methods only Galie's ingenious use of the gracilis tendon commends itself. There are a number of other schemes mechanically doubtful, seemingly without much record of success. The technique here described is the outcome of a long-cherished conviction that the important item was restoration of laterals, strong enough to hold and so placed as not to lock motion in flexion and extension.

The first case, about twenty years ago, was one of a loose knee following a total dislocation. The patient was a middle-aged man. The suture material was heavy braided silk.* Later, partly

*Under the influence of Professor Dr. Lange we were using silk at that time for everything for bridging of an interval, expecting repair to convert the silk into a scar tendon. Sooner or later we got back most of this silk.

All of them were treated conservatively. All of them, except No 10, were treated either by a member of our medical staff or by a selected orthopedist. The compression fracture in No 4 was complicated by a serious hypertension, in No 8 by a fractured os calcis, in No 7 there were two separate fractures, a cervical and a lumbar, No 6 had been operated upon for carcinoma of the tongue sixteen months earlier. He did not have a metastasis in the spine, thank

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CHART VII.

Nos 1, 2, 3 and 4 were treated privately, either because they reported immediately to a private physician or were removed to a nearby hospital. This group was treated by open operation. The average days lost per case were 246.

Nos 5, 6, 7, 8 and 9 were similar cases in which we were able to institute or engage treatment. None of them had open operation, rather they had manipulation and impaction under ether. No 5 had fractured both ossa calces, No 9 had fractured both ossa calces, both men falling from telephone poles, and No 8 also had a vertebral compression fracture. The average days per case lost from work in this group were 124.

None of the first group of men have ever been able to return to work as linemen. Four of the second group are climbing and I hope the last one, a fairly recent case, will be able to do so.

Of course, no two fractures may be exactly alike and the same treatment may not be best suited for all cases. But a fractured os calcis is a fractured os calcis and you may take this picture for what it is worth.

It was my feeling that injured backs and fractured heels would interest you. Whether our management of these annoying problems is good or bad as compared with the results obtained by other men, I do not know. I told about them because they are problems, but I do know that no telephone man who had a fracture in his spine or who strained or otherwise injured his back or who broke his heels is permanently disabled for work, or ever was pensioned or fired from work, because of incapacity or of inability to do some work. And with only two exceptions, all telephone men who have ever been injured by reason of an accident arising out of and in the course of employment and who survived, are earning to-day as much as they did before the accident or more. Only one man is perhaps permanently disabled. He was past sixty-two years of age and had Parkinson's disease when he slipped on a stairway without physical or serious injury, but his preexisting pronounced disability was considered aggravated by the fall. That is liberal treatment of a high order.

Only two women who have been injured within the last twenty years failed to return to work. One of these has been disabled for four years. She is a mental problem. The other is the sacro-iliac case, now absent from work thirty-five months. I hope they, too, will recover working ability.

Such, then, are the results, good or bad, of an experience wherein the problems of industrial accidents are controlled by the industry itself and when education, fair and just treatment have developed cooperation, right thinking and a helpful responsive attitude on the part of the employees of that industry.

ARTIFICIAL LIGAMENTS AT THE KNEE

A Technique

BY FREDERIC JAY COTTON, M.D.,* AND GORDON MACKAY MORRISON, M.D.*

RUPTURES of lateral ligaments or ruptured crucials at the knee have engendered a vast deal of literature.

*First, as to the ruptured crucials, the diagnosis is at least difficult, and with even one lateral gone there is enough free play to make the crucials suspected. There is a good deal of reason to feel that with the laterals intact or restored, perhaps ruptured crucials may not be very important. Then, too, any direct attack on the crucials must do some harm and be of doubtful mechanical stabilizing effect.

Of the indirect methods only Gallie's ingenious use of the gracilis tendon commends itself. There are a number of other schemes mechanically doubtful, seemingly without much record of success. The technique here described is the outcome of a long-cherished conviction that the important item was restoration of laterals, strong enough to hold and so placed as not to lock motion in flexion and extension.

The first case, about twenty years ago, was one of a loose knee following a total dislocation. The patient was a middle-aged man. The suture material was heavy braided silk.* Later, partly

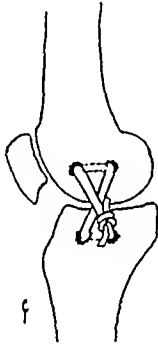
*Cotton and Morrison—For records and addresses of authors see page 817 issue of April 12, 1934.

*Under the influence of Professor Dr. Lange we were using silk at that time for everything for bridging of an interval expecting repair to convert the silk into a scar tendon. Sooner or later we got back most of this silk.

because of the irritation leading to removal of the silk, there was a good deal of loss of motion though the joint was stable

The principle of the x-suture deeply placed was made clear, however, and presently we were doing occasional cases with the present technique, using fascial bands. The essential thing about it all is that with one or both laterals gone, satisfactory ligaments may be constructed out of fascia

To avoid interference with motion the resultant ligament must be attached near the radial center of the curve of the femoral joint surface, seen laterally (see figure) just below the tip of the adductor tubercle, if we are making



an internal lateral ligament and not too far back or front at the tibial attachment. To get strong bony mooring the fascial strip must go deep under a strong bridge of bone rather deep into the cancellous bone. That means two holes and, in order to avoid an undesirable broad ribbon of ligament, it means an x-crossing of the false ligament. The fascia is drawn taut, knotted, and the knot fastened with gut or fine silk sutures. The whole operation, even if both inner and outer sides are operated on, can be done without opening the knee joint. There is no point in opening it.

Motion at three weeks, weight at six, gives results. A convalescent splint will be called for longer than this, because there is, no matter how tight the knot, a slacking up of the ligament

This slack "takes up" with time but is likely to persist for four months or more

Two cases had poor motion.*

The rest of the not long list recovered satisfactory function though with less than normal range of flexion

J M, aged 21, seen October 3, 1929. Was running down the field in a football game when his knee gave way. This was three months before he was examined. He showed unquestioned rupture of the external lateral ligament (including the long lateral) of the right knee, with marked abnormal mobility, unimproved in the three month interval.

Operation was performed at the Boston City Hospital, November 7, 1929. This was the typical insertion of a suture of strong fascia from the thigh, passed under a bridge of cortical bone above and below the joint, and crossed in x pattern and tied as already described.

Recovery was satisfactory, with no trouble after the early part of the year 1930. Has played baseball, tennis, etc. Examined July 11, 1933. He showed full motion of the knee, no abnormal "slack" laterally, and demonstrated that he could squat on his heels, and do the "duck waddle."

There is some risk of mistake as to the diagnosis of ligament rupture, and several cases have been seen which were diagnosed as internal lateral ligament tears in which operation disclosed an intact ligament, but sharp tearing of the stout fascia enclosing the insertion of the vastus internus, and the hamstrings. All did well, but might have done well without operation. Oddly enough these cases may show an abnormal lateral mobility of twenty degrees or more.

Case S W, aged 30. Seen in consultation at the Boston City Hospital, January 13, 1930. Five days previously he had sustained a compound fracture of the right ankle, an injury to the left brachial plexus and damage to the right knee without gross lesions. Seen again January 21. At that time a gap could be felt in the tissues on the inner side of the knee, abnormal lateral motion persisted, but operation was recommended for tear of the fascia, not the ligament.

Operation at City Hospital, February 4, 1930. Oblique tear in the fascia in front of the hamstrings two inches long. This was sutured. March 17 note "knee solid, motion returning." As late as the spring of 1933 he was entirely without trace of any of his injuries.

*But both had had total knee dislocations though without much damage.

A CALL FOR HELP

There are four sources of illness, suffering, and annoyance which the Board of Health is trying to eliminate during the summer months for the benefit of our residents. The effectiveness of this work depends largely on the help and coöperation which we receive from our residents. The activities to which we refer are the prevention of fly and mosquito breeding and the destruction of ragweed and poison ivy. The prevention of fly breeding and the destruction of ragweed and poison ivy are considered in detail in special articles in this issue of the *Bulletin*, which our citizens should read in order to learn how they may help in this work.

Mosquito control has been repeatedly discussed in previous issues so we will merely emphasize at this time the fact that mosquitoes breed only in water. Any water that stands for ten days may be a source of mosquito breeding. Hundreds of mosquitoes may emerge from an ordinary tin can which is left around the yard, from a watering pot or pail, and other chance receptacles. The inspectors locate many of these but they cannot get around often enough to keep everyone's place free from standing water, so that we must depend largely on our citizens to prevent mosquito breeding.—*Brookline Health Bulletin*

MEDICAL PROGRESS

PROGRESS IN ANESTHESIA IN 1933

BY RUSSELL F. SHELDON, M.D.*

At its 1933 session in Chicago the American Medical Association devoted two days to Anesthesia. An anesthetist, Albert H. Miller, Providence, R. I. was Chairman of the Section on Miscellaneous Topics, and presided at these meetings. In addition, further steps were taken during 1933 toward the national certification of specialists in anesthesia and more active measures have been taken, both in legislative and medical channels to clarify the status of the physician anesthetist. But most significant of all at least locally, more serious efforts are being made in the instruction of students in the art and practice of anesthesia. There is particular reference to the changes made in this respect at the Harvard Medical School, and in connection therewith to the appointment of a resident anesthetist at the Massachusetts General Hospital.

Locally, and throughout the country, anesthetists mourn the loss on November 16, of their esteemed confrere, Frank L. Richardson.

The literature of 1933 is as usual prolific, and no attempt at listing all of it will be made. The enthusiasm which accompanied the introduction of barbituric acid derivatives has somewhat abated, though the use of one new product, sodium evipan^{1, 2, 3, 4, 5}, as a brief intravenous general anesthetic agent has attained considerable publicity. But in general, the barbiturates have proved more useful as preliminary sedatives⁶ than as anesthetic agents in themselves. Certain other new ones have been presented.⁸

In a similar way the rectal use of trihromethanol is becoming more of a preliminary to inhalation or local methods than for complete anesthesia. Authentic reports on fatal cases following the use of avertin are still scarce^{9, 10, 11}, though occasional authors, as Evans¹², speak of them as occurring. Barlow^{13, 14}, has continued his researches to include the study of avertin fluid, as marketed, with amylene hydrate as solvent, and concludes that the presence of amylene hydrate delays the absorption of trihromethanol, and therefore makes it safer. These studies were made on the rat, but are probably applicable to human beings. Koontz and Moulton¹⁵ present an interesting study on the effect of avertin in the treatment of lung edema brought on by chemical irritation, as in gas warfare, or civilian practice as exemplified by the Cleveland disaster. They find it to be

of distinct benefit. As a more accurate test than the usual Congo red for the purity of avertin fluid preparatory to use, Ashworth¹⁶, recommends the use of "Universal indicator."

In inhalation anesthesia two new agents have been introduced, divinyl oxide, commercially vinesthine, prepared by Merck, and cyclopropane. The latter is still undergoing tests of its usefulness and application, and has not yet appeared to any great extent in the literature. It is, however like divinyl oxide, originally a creature of the chemist, a product which in theory ought to be a good anesthetic. The results of intensive clinical application by Waters at Wisconsin will later be available. Its originator is Henderson of Toronto.

Divinyl oxide, put forth by Leake¹⁷ in California, has been tried out in animals and to some extent in human beings¹⁸. In theory it should be an ideal anesthetic, but in action it approximates chloroform. Its general use is not yet indicated.

Herb¹⁹ maintains her position on the superiority of ethylene for general anesthesia. She reports as shown by answers to a questionnaire, thirty-nine explosions with seven injuries and five deaths from nitrous oxide, oxygen and ether, and twenty explosions with one injury and five deaths from ethylene, and with mixtures of nitrous oxide and ethylene two deaths. Sise²⁰ also finds more explosions with nitrous oxide, oxygen and ether than with ethylene. Humidity of the operating-room appears to be the safety factor in the prevention of explosions.

In its report for 1932²¹, published in 1933, the Mayo Clinic reports an increase in the use of ether. This trend is, I believe, noticeable in other places.

Spinal anesthesia, despite the crepe-hanging of Landemulder²² maintains its popularity, especially for genito-urinary and pelvic work and surgery of the lower extremities. Marvin²³, Kemp²⁴, Grodinsky²⁵, and Tovell²⁶ provide sensible and clear presentations of its scope and usefulness. In nomenclature, neothesis has become metvaine.

The Mayo Clinic²⁷ finds the use of ampoules of ten per cent solution of procaine more convenient and less expensive than the crystals the use of which has been discontinued, but elsewhere the crystals maintain their lead. Harpin²⁸, emphasizes the value of caudal anesthesia in urology, and Dogliotti²⁹ presents a full description of the peridural technique.

Little new in technique has been brought out,

Sheldon, Russell F.—Assistant Anesthetist, Massachusetts General Hospital and Massachusetts Eye and Ear Infirmary. For record and address of author see "This Week's Issue" page 1344.

but there is definite increased use of the carbon-dioxide filtration method, and for upper abdominal work, administration of volatile anesthetics by the intratracheal route has increased. This of course insures an airway, and to lessen the trauma from metallic pharyngeal airways Guedel⁵⁰ has introduced a non-traumatic one made of rubber.

Flagg^{31 32 33} has kept up his campaign against asphyxial deaths, and urges cooperation of all agencies concerned, fire departments, public service corporations, and above all, the medical profession.

In resuscitation, Wood³⁶, Killian³⁴ and Reese³⁵ proclaim the virtues of coramine and in the use of hydrochloric acid intravenously MacGillivray³⁷ has introduced the term palmaesthesia. Further investigation, however, is needed in both these drugs.

In research, the Massachusetts General Hospital^{38 39 40 41} has contributed some valuable work under the leadership of Means and Churchill. The physiology of respiration with the open chest and abdomen has received intensive study. At Wisconsin, Orcutt and Waters⁴² have shown the diffusibility of nitrous oxide and ethylene through human skin. Further experimental work on spinal has been published from the Mayo Clinic^{27 43 44} and Co Tu⁴⁵ and Hill and Macdonald⁴⁶ have continued their studies. The so-called circulation of the cerebrospinal fluid has been investigated by Hassin⁴⁷, and, further, Bhatia and Burn⁴⁸ have reported on the action of ether on the sympathetic nervous system. Neff⁴⁹ finds the present ether as supplied by the manufacturers to be generally pure but does not recommend its standing more than forty-eight hours in a gas machine.

In the estimation of the preoperative risk and the prophylaxis of postoperative complications in surgery of the biliary tract, Hussey⁵⁰ summarizes the available information, and McQuiston⁵¹ shows that hypotension in itself is not a serious factor.

Constant efforts in oxygen therapy are producing new and better tents.

Studies in postoperative complications, especially pulmonary, continue, but no new startling conclusions have appeared. King^{52 53 54}, however, remains in the minority as regards the value of carbon dioxide in the prevention of pulmonary complications. Alison⁵⁵, Prinzmetal, et al⁵⁶, and Bergh⁵⁷ feel that inhalations of carbon dioxide are helpful. Overholt and Veal⁵⁸ show that certain chest conditions may be "normal" after surgical procedures. Coryllos⁵⁹ describes his technique of intratracheal anesthesia and bronchial suction as helpful in the prevention of complications in the surgical treatment of tuberculosis.

For 1934 anesthesia looks forward to a continued advancement to the end that benefits will accrue to both patient and surgeon.

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JUST ANOTHER PROOF

In the Journal of the American Medical Association of October 28, 1933, Clausen, S W and McCoord, Augusta B, make the following statement "Under ordinary circumstances sufficient quantities of Vitamin A are provided by a diet in infancy which contains milk, cod liver oil from the second week of life, and vegetables from the fifth or sixth month "

Just another proof that many of the foremost investigators regard cod liver oil as the good, old reliable, and that it no doubt will continue to be prescribed after many of the new-fangled vitamin fads and artificial substitutes have fallen into disrepute

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CANCER MORTALITY

Decrying the difficulty of obtaining accurate information respecting cancer mortality due to the fact, among others, that in a number of states the disease is not reportable by law, Dr Louis I. Dublin on May 25 urged cancer specialists and the entire medical profession to cooperate with vital statisticians in an effort to secure more reliable data along these lines.

In an address on the "Incidence of Gastric Cancers" before the Symposium on Carcinoma of the Stomach, at the fiftieth anniversary of Memorial Hospital, Dr Dublin presented statistics and facts pertaining to cancer of the stomach based upon the experience of his company's Industrial policyholders. He concluded that, in the United States, the stomach is the principal site of fatal cancer among white males and also very probably among white females that the incidence of gastric cancer is approximately fifty per cent greater among white males than among white females and that among white females, the death rate from gastric cancer and by inference the incidence of gastric cancer, appears to be decreasing at a rate greater than can be attributed to chance alone. 'Among males,' Dr Dublin said, "the death rate has shown a slight tendency to increase but this is statistically significant only at the older ages of life."

He said that 'possibly as many as one-third of the deaths actually due to cancer of the stomach are ascribed to other causes.'

Pointing out that in 1932 a total of 27,000 deaths from gastric cancer were recorded for the population of the United States, he declared that 'it is my judgment that instead of 27,000 the annual number of deaths from cancer of the stomach and duodenum in the country at large is now more likely to be close to 40,000, or about as many as

from bronchopneumonia, or coronary disease, including angina pectoris."

The statistical picture, however, Dr Dublin declared is improving.

"I give you these figures for the insured with the very strong conviction that they show us essentially what has been happening in this disease in the general population of the country."

"There was a total of 40,573 deaths from gastric cancer among these insured lives in the years 1917 to 1933 inclusive. These occurred among an annual average of fifteen million policyholders over this period. The average annual crude death rate was, therefore 15.5 per 100,000 exposed. The gastric cancers constituted 20.8 per cent of all cancer deaths, the figures being much higher among the males than among the females."

He explained that deaths from gastric cancer are largely concentrated in the later ages of life.

"There are few deaths under 25. At ages 25 to 34, the rates are still low—averaging less than two per 100,000 per annum. It is only after age 35 that the death rate from this disease has any real meaning. At 45 to 54 years, the rates are already fairly high."

"Among white males the average death rate in this age group over this entire period of seventeen years was 46.7 per 100,000, as contrasted with 30.6 per hundred thousand among white females. The death rate almost trebles in the next age period. Among white males it is 132.7 per 100,000, among white females, 85.2 per 100,000. In the next age period that is, 65 to 74, the rate almost doubles among white males and more than doubles among white females. The interesting points in figures are first, that the rates rise with advancing age and, second, that they are much higher among the males than among the females, being, in fact from a third to a half higher in the white race."

CASE RECORDS of the MASSACHUSETTS GENERAL HOSPITAL

ANTE MORTEM AND POST MORTEM RECORDS AS USED
IN WEEKLY CLINICAL PATHOLOGIC EXERCISES

EDITED BY RICHARD C. CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 20251

PRESENTATION OF CASE

First admission A sixty-one year old American widow entered for the first time eight months before her final admission.

Four months before admission she noticed a swelling on the left edge of her tongue. This swelling became sore and gradually increased to about one inch in diameter. She had worn a plate of false teeth in the upper jaw for eighteen years, and a few false teeth in the lower jaw. So far as she knew the plate fitted well and produced no irritation.

She had been seen in the Outpatient Department, where a biopsy showed an epidermoid carcinoma, grade III, and Hinton and Wassermann tests were positive.

There was no history of tuberculosis or cancer. She used no tobacco or alcohol.

The patient had been married for twenty-five years. Her husband died of heart failure five years before her admission. She had no children. She had had amenorrhea since the age of twenty-one. The cause of this was unknown.

She had had a cataract removed from her right eye nine years before admission. She had had severe frontal headaches, usually coming on in the evening. She had difficulty in hearing and occasional ringing in the ears. There was no history of precordial pain, palpitation, dyspnea or edema. She had pleurisy six years before admission, but no cough or hemoptysis.

Physical examination showed a well-nourished woman lying quietly in bed. There was a small cataract in the left eye, and the right eye showed an operative defect from the removal of a cataract. There was a large perforation of the bony septum of the nose. The lesion on the tongue was located on the left side and extended from the anterior pillar of the fauces halfway to the tip. No cervical glands were palpable. There was a soft precordial systolic murmur. A hard mass was palpable in the epigastrium, not tender, descending slightly with inspiration. The right lobe of the liver was not palpable.

The right ankle and knee jerks were not obtained.

Examination of the urine was negative. The blood showed a red cell count of 3,890,000, a

hemoglobin of 60 per cent, a white cell count of 9,000.

A gastro-intestinal x-ray series showed a slight irregularity of the duodenal cap on its upper border. No definite ulcer crater could be visualized.

Radium seeds were implanted in the carcinoma of the tongue. The following day x-ray therapy was started. She was discharged three days after admission and told to return to the Outpatient Department for further x-ray treatment.

History of interval Except for some smarting of her tongue during eating and increased irritability because of her headaches she was perfectly well following her discharge until three days before readmission. At that time, while waiting for x-ray treatment, she complained of a sick feeling in her stomach and suddenly vomited about a quart of watery food material mixed with blood. Her blood pressure was 140/85. At the previous admission it was 190/90.

Second admission, eight months after her previous discharge. She was kept in the Emergency Ward under observation. The following morning she suddenly vomited a quart or more of bright red blood and simultaneously had a bowel movement. The blood pressure dropped to 60/30 and the pulse rose to 140. She was placed on the shock table and given morphine and later a slow intravenous injection of two and a half per cent glucose. There was some improvement and her blood pressure rose to 108/35. Physical examination was practically the same as on her previous admission. The same smooth firm mass was felt in the upper epigastrium. Examination of her blood showed a red cell count of 3,050,000, a hemoglobin of 70 per cent, a white cell count of 10,800, with 90 per cent polymorphonuclears. The non-protein nitrogen of the blood was 62 milligrams, the blood sugar 139 milligrams, and the carbon dioxide combining power 48.2 volumes per cent.

She was given 600 cubic centimeters of citrated blood. The blood pressure rose to 120/140 systolic. She became comatose and had almost an acidotic breathing. She developed fluid in her chest and shortly before death had a generalized convulsion during which her face was drawn over to the right. She died the day following admission.

DR. TRACY B. MALLORY Dr. Winn, there is one thing that was not entirely clear from the record. Did she ever recover consciousness from the complete shock?

DR. W. A. WINN Not after the time of the second hemorrhage. She was irrational. The visiting physician brought up the question whether or not she had had too much morphine or whether the high non-protein nitrogen caused her coma.

DIFFERENTIAL DIAGNOSIS

DR ROBERT R LINTON In going over this case I have selected what I think are the essential points in the history First of all she was sixty-one years old At the time of her first admission she had cancer of the tongue, grade III, which was adequately taken care of, or presumably so, with radium and x-ray therapy It was noted at that time that she did not have any enlarged lymph nodes in her neck, so I presume she did not have any metastases

The next thing of interest in the past history is that she had a positive Wassermann and a positive Hinton So far as I can see this condition had not been treated

The story that she had no children is of interest, although I think it has nothing to do with the cause of death Her amenorrhea undoubtedly explains the fact that she did not have any children What the exact cause of that was I hesitate to say It may have been an endocrine condition and it may possibly have been a luetic or tuberculous condition

In addition she also had bilateral cataracts, one of these having been removed and the other being still present, but apparently it did not bother her enough for her to have anything done about it

On physical examination at the first entry she had a lesion on her tongue and in addition a perforated nasal septum Her right ankle and knee jerks were not obtained

Of significance I think was the mass that was felt in the midepigastrium, described as hard and smooth and moving on deep inspiration I think we should pay particular attention to that mass in trying to explain her death

Laboratory examination at that time showed that she had a secondary anemia.

X-ray examination showed a defect in the duodenal cap, but they could see no definite ulcer

She went home after she had had her radium and x-ray therapy and returned eight months later, presumably for further x-ray treatment Her history in this intervening time shows that she was fairly well She did have some headaches and I think had not felt quite up to par, although we are told here that she had felt perfectly well

The acute episode apparently started with the vomiting of a large amount of watery material which was food with blood mixed with it. That amount of bleeding of course would not point to any one lesion in particular except that there was some pathology in the gastro-intestinal tract There is no question that the blood was coughed up, it apparently was vomited The next morning she vomited a quart of bright red blood and with that she had a fall in blood pressure That I think is of considerably more significance than the fact that she had been vomiting food with a little blood in it

In spite of transfusion she rapidly went downhill Her blood studies and laboratory examinations were essentially negative except for the elevated non-protein nitrogen, which was taken in a period of shock and I think might possibly be explained by lowering of the blood pressure and shutting down of urinary excretion Following the transfusion she became comatose and died in a convulsion, the face drawing over to one side I should presume that was the terminal event and not the real cause of her death

To review the possibilities that this patient might have I think we shall agree that the cause of death was primary acute hemorrhage, and that it probably came from the gastro-intestinal tract

I forgot to mention that the mass in the midepigastrium on the second admission was exactly the same as at the previous entry I think that is of considerable importance She had carcinoma of the tongue It is possible but very improbable that she might have had metastatic carcinoma which was showing itself in the liver Against that also is the fact that the mass in the epigastrium had not changed Carcinoma of the tongue I think very rarely if ever metastasizes to the liver So I think we cannot explain her death on the basis that it might have been a metastatic lesion of cancer

Then there is the question whether or not she had a duodenal ulcer Her history is against that because she had no gastro-intestinal symptoms The x-ray suggested a duodenal ulcer, but this was not definite I think we can pretty definitely rule out duodenal ulcer as the cause of her acute hemorrhage

It is possible she had a cancer of the stomach with metastases to the liver and hemorrhage from the carcinoma in the stomach Against that, however, is the fact that the mass in the epigastrium had not changed in size

One of the most common causes of acute hemorrhage and massive hemorrhage such as this is esophageal varices associated with cirrhosis of the liver Physical examination noted that the mass could be felt in the left, but the right lobe could not be felt I do not think that means a small right lobe It may possibly have been a large lobe, for it may have been there but not have been palpated No note is made as to the size of the liver to percussion That might have given us a clue as to the size There is the question of the etiology of the cirrhosis, if she had it In the history it states that she took no drugs and no alcohol So presumably it was not an alcoholic cirrhosis She had a positive Wassermann and had it for a good many years without treatment I presume, and she had symptoms of tertiary lues and a positive blood It seems to me most likely that she died of acute hemorrhage from esophageal varices associated with

cirrhosis of the liver which I think may be luetic in origin

DR GRANTLEY W TAYLOR In regard to the etiology of her tongue condition, we have found that carcinoma of the tongue very frequently originates on a luetic basis. The Wassermann is positive in about twenty-five per cent of the cases of carcinoma of the tongue, which often perhaps brings about some delay in prompt treatment of cancer of the tongue, because a diagnosis of lues is made and at first it is assumed that the condition is a simple luetic glossitis without secondary carcinoma. The only other etiologic factor is possibly the false teeth, but those dentures are much more commonly associated etiologically with carcinoma of the palate or jaw than of the tongue.

In regard to the treatment of her tongue lesion, which appeared to be temporarily effective, we are getting more and more to depend on radiation almost to the exclusion of surgery in treatment of carcinoma of the tongue. If there are bad dental conditions or sepsis we try to clean them up and then combine interstitial radium treatment with x-ray treatment in doses which are very massive as compared with the treatment we used a few years ago.

The handling of the lymph node areas by operation seems to me much less common now than it was ten years ago. Cures of carcinoma of the tongue in which the cervical lymph nodes are involved are very rare and limited almost entirely to those cases which show only microscopic evidence of lymph node involvement. If there is evident gross involvement with metastatic disease the case is essentially incurable by any means. In regard to the possibility of remote metastasis from carcinoma of the tongue it does occur, but it is extremely rare. Dr Lund reviewed in the neighborhood of eleven hundred cases of carcinoma of the buccal mucosa in general at the Huntington Hospital and found no instances of metastasis beyond the clavicle. I recall one case with liver metastasis. When I was talking about it with Dr Hartwell he remembered one case, and it developed that they were the same case. I have seen one case with pulmonary involvement, but it must be extremely rare, and I think it would be unwise to assume that it had anything to do with this condition from which she died.

DR WILLIAM B BREED I am impressed with the ease with which Dr Linton ruled out hemorrhage from the duodenum on the basis of no digestive symptoms, because so many of these cases that bleed from the duodenum have had no digestive symptoms. I think these cases bleed more often than the ones that have had symptoms.

DR MALLORY There is one other point that deserves a little discussion, and that is the development and persistence of coma in this case.

It brings up the question as to whether or not there was a cerebral lesion.

DR W JASON MIXTER I think the question of coma is of considerable importance, and also the question of convulsions. In going over the records we find that the reflexes are present on one side and not on the other. It seems to me that an intracranial lesion must be suspected.

CLINICAL DIAGNOSES

Carcinoma of tongue, grade III
Late syphilis
Hematemesis
Cirrhosis of the liver?
Cerebral hemorrhage

ANATOMIC DIAGNOSES

Cirrhosis of the liver, toxic type
Esophageal varices
Duodenal erosion
Intestinal hemorrhage
Pulmonary edema
Pulmonary emphysema, slight
Operative wound—radiation scar for carcinoma of tongue
Operative wound—removal of cataract, right eye

PATHOLOGIC DISCUSSION

DR MALLOBY The autopsy here showed according to Dr Linton's prediction a very marked cirrhosis of the liver. There were esophageal varices, rather slight ones, we were unable to demonstrate a bleeding point. In addition I can side with Dr Breed, because there was a shallow ulcer in the duodenum. So from which of these two lesions she bled I do not know. At autopsy it seemed equally possible that either was the source of the hemorrhage.

The cirrhosis was a coarsely nodular one. The right lobe was very small and the left lobe distinctly a little big. The spleen was not enlarged, so the mass which had been felt was certainly the left lobe of the liver.

The brain I am going to ask Dr Kubik to tell you about. We have had two or three cases somewhat similar to this in patients who have had shock or hemorrhage. In each case there has been a tremendous drop in blood pressure which persisted for some time and definite cerebral symptoms developed, but we have not been able to find any occlusion of vessels or any hemorrhage. It raises the question whether the tremendously lowered blood pressure may result in cerebral degeneration. This patient had been carrying a pressure of 190, so that a drop to 60 would be more significant than in a non-hypertensive case. It seems possible that that is the cause of the cerebral lesion.

DR CHARLES S KUBIK Although there was no gross circumscribed lesion such as hemorrhage or infarct, there was found on microscopic

examination an interesting condition with a bilateral diffuse distribution in the cerebral cortex. Ganglion cells were damaged, glia cells (astrocytes) were swollen and increased in number and there was a decided increase in the amount of fibrous glia. The changes were much more pronounced in the fifth and sixth laminae, that is in the deep layers of the cortex. The glial changes are not restricted to the grey matter, but are also found in the outer zone of subcortical white matter. It is rather remarkable that there was little if any arteriosclerosis. The main arteries had thin translucent collapsed walls. There was probably some arteriosclerosis, but this did not seem to be marked.

The deep layers of the cortex seem to be particularly susceptible to degenerative changes. I recall two cases of delirium, one of which was probably a toxic affair resulting from the use of sedative drugs, in which similar changes were found. In another case, where death occurred two weeks after a severe degree of asphyxia, there was marked degeneration with complete destruction of myelin in this same region. The fact that this part of the cortex is particularly vulnerable when exposed to the effects of anoxemia or toxic agents is probably dependent in some way on the arrangement of its blood supply. In the case before us it is reasonable to suppose that the degenerative changes are due to a deficient supply of blood resulting from hemorrhage and exceedingly low blood pressure. The convulsion was probably a manifestation of relative anoxemia.

DR ALFRED KRANES: We have had several cases in the past two years in which after morphine the patients with cirrhosis became more and more comatose, almost like a myxedematous reaction to the drug. I wonder if any one else has seen it.

DR EDWARD B. BENEDICT: With regard to the hemorrhage, since the pathologists could not be sure of its source in this case, no one can tell, but Rivers and Wilbur of the Mayo Clinic recently reported that of all cases of gross hematemesis over 50 per cent are due to duodenal ulcer and only about 5 per cent are due to esophageal varices.

DR. MALLORY: It is the commonest cause, although this was a very shallow ulcer, not a particularly massive one.

CASE 20252

PRESENTATION OF CASE

A forty-eight year old unemployed Finn, formerly a dock laborer, entered complaining of weakness, abdominal pain and jaundice.

Approximately one year before admission he began to have mild indigestion and diarrhea. Over a period of one month he lost about ten pounds in weight. His family physician prescribed some drops to take at meal times. The

diarrhea cleared up, but he remained weak and continued to lose weight. About five months before entry he visited a large medical center in New York City where a diagnosis of pernicious anemia was made and liver therapy was begun. At about this time he developed a dragging sensation in his abdomen and a little later definite pain which radiated to the pubis. The pain was severe enough to keep him awake at night. He spent the summer before admission in Maine. His diet consisted for the most part of milk, lettuce, spinach and string beans. During the past three months he had vomited about once a month and during the past three weeks about once a week. The abdominal discomfort became worse. Three days before admission he developed a constant diarrhea consisting of three to five loose watery movements a day. He believed that he had been slightly jaundiced during these events and that he had lost in all approximately thirty-two pounds in weight. During the past month he had had slight edema of his right ankle.

The family and marital histories are non-contributory. The past history is negative.

Physical examination showed an emaciated, sunburned elderly man. The skin and mucous membranes were pale but not jaundiced. There was marked pyorrhea and caries of the teeth. There was a soft basal systolic murmur. The fundi showed moderate sclerosis. The blood pressure was 155/65. The pulse was 112 and Corrigan in character. The abdomen was protuberant and dull to percussion. This was interpreted as fluid. There was a hard irregular mass above and to the left of the umbilicus but below the epigastrium. There was a small strangulated hemorrhoid.

The temperature was 100°, the respirations 20.

Examination of the blood showed a red cell count of 3,200,000 with a hemoglobin of 45 per cent. The white cell count was 25,000, with 82 per cent polymorphonuclears. A smear showed the red cells to be normal. Examination of the stools was negative. A Hinton test was negative. A liver function test showed ten per cent retention. The icteric index was 8.

He failed very rapidly and died two days after admission. The terminal white cell count was 42,000.

DIFFERENTIAL DIAGNOSIS

DR DANIEL F. JONES: I always have admired Dr. Richard Cabot for the way he could make a diagnosis from these histories, and I admire him still more after seeing this history. He must have run across very similar cases in his long period of doing this work. I do not know that I have ever seen a history that has so little in it that is of any value. The patient comes in complaining of weakness, which is of importance, and which has been increasing for quite a period. He has abdominal pain, and the note

says that he has jaundice. The first question is whether he ever did have jaundice, and if possible the value of that statement by the patient should have been indicated in some way. It is evident that he did not have jaundice, or probably did not have jaundice, because he went to a clinic in New York where he was found to have "pernicious anemia." In addition to that a blood test was done here and the test for bile was found to be negative.

If we go on through the history we have some important points, but not very helpful in making a definite diagnosis. He has mild indigestion and diarrhea, which means something, but it could mean so many things that it does not mean much. The diarrhea cleared up. If it cleared up what we ought to know is whether or not he was then markedly constipated. That would help us in deciding as to whether he had something in the intestine, but merely to say he had diarrhea which cleared up is not of any value to the man who is reading the history.

He visited a large clinic in New York where a diagnosis of pernicious anemia was made. That would suggest that he did not have jaundice before he came in, but was *sallow*, the term that is used by laymen so much but does not mean jaundice in the great majority of cases.

We are in a hole in this case, so to speak. We have nothing to go on. When a patient has pain in the abdomen, that is of no value in making a diagnosis. If he has pain we must know what it is like, where it is, how severe it is, whether cramp-like, whether constant, and many other things, none of which are given us here, except the one thing a little later, a definite pain which radiated to the pubis. Abdominal pains radiating to the pubis are not very helpful. They sometimes suggest something in the bladder or pelvis, but that is all we can say about that. We get the severity of the pain later in that it kept him awake at times.

We have another point to help us out. One might not think it much, but with a history like this we have to jump at minor details. Here is a man who had milk, lettuce and string beans during the summer and nothing is said in regard to constipation or diarrhea during that time. That would suggest to my mind that he did not have any constriction of his bowel, because with such coarse food he certainly ought to have become much more constipated.

Three days before admission he developed constant diarrhea, three to five watery movements a day, and the patient believed he was jaundiced. The sudden development of loose watery movements without a pretty careful previous history would not suggest anything definite to me. It certainly ought not to suggest, after such a long period, a constricting growth in the bowel.

He has lost a tremendous amount of weight. Another thing which I would call to your

attention is that he has slight edema of the right ankle. I would call that to your attention because we have a mass in the left upper abdomen, but no other mass. That ought to suggest then a metastasis or something in the lower abdomen pressing on the right iliac vein rather than the left. We have the mass in the left side, therefore that should have nothing to do with the edema of the ankle.

When we come to the physical examination, what can we get out of that? He is a sunburned man, pale, but not jaundiced. So it is probable that he never has been jaundiced with our other evidence. There is marked pyorrhea and caries of the teeth, which amounts to very little. The abdomen was protuberant and dull to percussion. I agree entirely with what Dr. Vincent said in regard to fluid in the abdomen, that it is a very difficult condition to determine accurately. I have seen all sorts of men make all sorts of errors in regard to it. But his abdomen was protuberant and was dull to percussion. We must pay some attention to that, probably fluid.

There is a hard irregular mass just above the umbilicus but below the epigastrium. That is pretty slight evidence. It moved slightly with respiration. We do not know whether it moved by manual pressure. So that this mass is rather an indefinite thing. We do not know whether it is retroperitoneal, whether it is in the transverse colon, whether it is in the omentum, or whether it is deep in the region of the pancreas, although of course if it is pancreas it would be at the lower border of the pancreas and not at the usual site for growth in the pancreas.

His temperature was 100°, which is of very little value in making a diagnosis. When there is a mass in the abdomen you could get an increased temperature and do get it very frequently in malignant disease, and it does not necessarily mean an inflammatory process.

The hemoglobin was 45, the white cell count 25,000. 25,000 is rather high, but still we could say that it was due to malignant disease.

Examination of the stools was negative. For what was it negative? Was it negative for blood? We do not know.

He had a negative Hinton test. The liver function showed 10 per cent retention. The icteric index was 8. He failed rapidly and died two days after admission.

In a case as blind as this a very careful, thorough examination of the abdomen is of importance. I do not see how one can possibly make a diagnosis without one.

The next thing is that we know there is a mass in the abdomen, with the suggestion of fluid, and great loss of weight, so we have a right to assume that this is malignant disease. This is, then, malignant disease, and we have some evidence that there is something on the right side of the pelvis to cause edema of the

right ankle. There ought to be something in the pelvis to be made out in some way and we have no rectal examination. That according to my thoughts would be of the greatest importance. So that we are trying to make a diagnosis on what I should call a very small history with very little in the way of physical examination. We have a mass in the left upper quadrant not well up in the quadrant but beyond the umbilicus. If it were in the transverse colon it should be somewhat movable and we ought to find something such as blood to suggest that it is in the transverse colon. If it is in the omentum then we should find something that would suggest that it is in the omentum, as proximity to the anterior abdominal wall, or its arc of rotation. We have none of these things to help us.

There is one other point that we must consider, that is, his great loss of weight and diarrhea. We might consider in such a case as that with a mass in the position of this mass a carcinoma or a growth of some kind in the pancreas that would account for the location of the mass, for the diarrhea, for the great weakness and for his color, but it would hardly account for the 45 per cent hemoglobin. I do not know how to account for that with a negative examination of the stool. A man with 3,200,000 red cells and 45 per cent hemoglobin ought to have had bleeding from somewhere, ought to have had a long continued hemorrhage. We must not forget that in growths in the colon from the cecum to the splenic flexure one symptom they have of importance is anemia, that many cases of carcinoma of the cecum have nothing but anemia and no pain. We have no pain suggesting large intestine pain, that is, pain below the umbilicus, except this pain which radiates to the symphysis, which means very little to my mind, and does not suggest pain due to the large intestine. So we have no pain suggesting the large intestine unless the man was so far along with his obstruction that the pain was localized near the growth. Then a patient forgets entirely that he has lower abdominal pain and says it is located in the region of the growth, and this man was far advanced.

I shall have to make a diagnosis in this case on general principles, that is, a man who had lost a great deal of weight, was anemic, had a mass in the left upper quadrant a little above the umbilicus, pain radiating to the symphysis, and abdominal pain, whatever that means. Abdominal pain would mean to me nothing in particular. I could not get anything definite out of it. If I only knew what was in the pelvis I

should feel very much more certain about the diagnosis. However, we do not know what was in the pelvis, therefore we must go on general principles, loss of weight, loss of strength, a mass just above the umbilicus, indefinite abdominal pain, fluid, all suggesting to my mind a general carcinomatosis of the abdomen rather than a growth in the pancreas or a growth in the large intestine. I feel that we should have some cause for the 45 per cent hemoglobin, which suggests hemorrhage to my mind.

CLINICAL DIAGNOSIS

Abdominal malignancy

ANATOMIC DIAGNOSIS

Carcinoma of the stomach with perforation into the transverse colon

PATHOLOGIC DISCUSSION

DR. TRACY B. MALLORY. I should like to assure Dr. Jones that we did not leave out anything. We gave him the entire history as it stands in the record and would gladly give him more if we could.

The point that interested me in this man's story was the fact that he had a flat-footed diagnosis of pernicious anemia made about a year and a half before at a leading hospital in New York, presumably on adequate grounds, and then he later developed the picture of malignancy. How much one would be justified in concluding from that I do not know, but it is certainly a fact that carcinomas of the stomach are not infrequently associated with a pernicious anemia blood picture which might lead one to place the malignancy there even though the physical examination did not particularly suggest it.

Our autopsy was limited to a six-inch incision in the abdomen, which the surgeons would probably consider very adequate, but which hampered us slightly, and I do not think we made as careful an exploration of the pelvis as Dr. Jones would have liked us to make. We did find a large tumor mass in the upper abdomen which involved both the stomach and the transverse colon, and a definite fistula between the two. So I think there is very little question but that it is primary carcinoma of the stomach ulcerating through to the transverse colon in the very last few days of life and would probably account for the sudden terminal development of diarrhea. The negative stools made it impossible to make that diagnosis ante mortem.

The New England Journal of Medicine

SUCCESSOR TO
THE BOSTON MEDICAL AND SURGICAL JOURNAL
Established in 1828

Published by THE MASSACHUSETTS MEDICAL SOCIETY
under the jurisdiction of the

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SUBSCRIPTION TERMS \$6.00 per year in advance postage paid
for the United States Canada \$7.04 per year, \$8.58 per year
for all foreign countries belonging to the Postal Union

Material for early publication should be received not later
than noon on Saturday. Orders for reprints must be sent to
the Journal office, 8 The Fenway

The Journal does not hold itself responsible for statements
made by any contributor

Communications should be addressed to The New England
Journal of Medicine, 8 The Fenway Boston, Mass

SOME FEATURES OF THE A M A CLEVELAND MEETING

A LARGE and enthusiastic meeting of the
American Medical Association convened at
Cleveland for the week beginning Monday,
June 11, 1934

The section meetings were of great excellence,
and well attended. The scientific exhibits pre-
sented the latest advances in dealing with dis-
ease, public health problems, and social features
of medicine. These exceeded the variety and
scope of previous years, and one might spend
the entire week to advantage in study of the in-
struction provided in this department.

As a form of medical education, if the grad-
uating classes of medical schools could have been
brought to Cleveland this year and conducted
through the spacious hall in which this scientific
display was presented, the average student would
probably supplement his four years of study
with more exact and useful information than
he has acquired hitherto.

In several instances motion pictures set forth
the facts in an impressive manner.

The *Cleveland Plain Dealer* in reporting the
session of the House of Delegates referred to
health insurance and veterans' hospitalization
as "hot poker" introduced into the delibera-
tions of this legislative body of the Association.
The reaction to the hospitalization of veterans
was a repetition of previous expressions. The
references to health insurance were in response
to a resolution by the Michigan State Medical
Society asking for the appointment of a com-
mittee to consider the A M A policy toward
mutual health service, and also the report of the
medical service Board of the American College of
Surgeons to the Board of Regents in which are
set forth the recommendations of this Board as
shown in a copy furnished by Dr. Franklin H.
Martin which appears on page 1345 of this issue.

This report was accepted and approved by the
Board of Regents of the American College of
Surgeons, and shows that this body, as repre-
sented by its Regents, believes in health insur-
ance for the low income group, with the elimina-
tion of certain objectionable features of the
customs abroad. This document also suggests
minimum standards for industrial medicine and
traumatic surgery.

It is of interest to note that Dr. Robert B.
Greenough is chairman of the Medical Service
Board of the American College of Surgeons.
When the attention of the House of Delegates
was called to the Michigan request and the ac-
tion of the College of Surgeons, Dr. Charles L.
Whalen of Chicago voiced his disapproval of the
attitude of these organizations, and a recess com-
mittee was appointed to consider the request of
the Michigan State Society. This probably
means that no action will be taken on this re-
port until the House of Delegates meets again,
and is an indication of a desire to postpone ac-
tion although this subject has been under discus-
sion for more than a year.

When this appeal of the Michigan Society
came before the House of Delegates, the House
went into executive session, but the newspaper
reports of the proceedings indicated disapproval
of any action by organizations of constituent
members of the American Medical Association.

In defining its position the House of De-
legates adopted a ten-point declaration of policy
contained in a report of a committee headed by
Dr. Nathan B. Van Etten of New York which
is as follows:

1—All features of medical service in any
method of medical practice should be under
the control of the medical profession. No other
body or individual is legally or educationally
equipped to exercise such control.

2—No third party must be permitted to come
between the patient and his physician in any
medical relation. All responsibility for the

character of medical service must be borne by the profession

3—Patients must have absolute freedom to choose a legally qualified doctor of medicine who will serve them from among all those qualified to practice and who are willing to give services

4—The method of giving the service must retain a permanent, confidential relation between the patient and a "family physician" This relation must be the fundamental and dominating feature of any system

5—All medical phases of all institutions involved in the medical service should be under professional control, it being understood that hospital service and medical service should be considered separately These institutions are but expansions of the equipment of the physician He is the only one whom the laws of all nations recognize as competent to use them in the delivery of service The medical profession alone can determine the adequacy and character of such institutions Their value depends on their operation according to medical standards

6—However the cost of medical service may be distributed, the immediate cost should be borne by the patient able to pay at the time the service is rendered

7—Medical service must have no connection with any cash benefits

8—Any form of medical service should include within its scope all qualified physicians of the locality covered by its operation who wish to give service under the conditions established

9—Systems for the relief of low income classes should be limited strictly to those below the "comfort level" standard of incomes

10—There should be no restrictions on treatment or prescribing not formulated and enforced by the organized medical profession

Much of this is quite like the plan adopted by the Michigan State Society, and also in conformity with several features of the report accepted by the Board of Regents of the American College of Surgeons, and it seems unusual for an organization like the American Medical Association to be disturbed because other organizations whose members are also members of the larger organization are studying existing conditions and codifying conclusions

The feeling expressed by the President of the New Jersey Society at the last annual meeting of that society to the effect that the American Medical Association has been disinclined to formulate policies, has been endorsed in some quarters, and justifies independent study and action even by members of the A. M. A. Although the great power and creditable accomplishments of the A. M. A. are recognized, the attitude of criticism of honest attempts to clarify some of the great problems before the country has not been conducive to harmony

The general spirit of the Cleveland meeting

as shown in the devotion to the service of humanity was a reflection of the ambition of the profession to advance medicine to still further knowledge of the problems before it This convention was one of the best in the history of organized medicine

The President-Elect is James Somerville McLester who was born in 1877 and graduated from the University of Virginia, Department of Medicine in 1899 He is Professor of Medicine in the University of Alabama School of Medicine with an office at 930 South 20th Street, Birmingham, Alabama

Massachusetts was recognized in the election of Dr. Roger I. Lee to the position of Trustee Dr. Emmett C. North of Missouri was elected a member of the Judicial Council

The next annual meeting will be at Atlantic City

QUINTUPLETS

DESPITE the bursts of public enthusiasm and inspirational journalism which have attended the most extraordinary instance so far recorded of what might euphemistically be termed synchronous multiparity, the birth of quintuplets is nevertheless of distinct medical interest In all medical history something over thirty cases of quintuplets have been recorded, no properly authenticated case of sextuplets Prior to the notable achievement of Olivia Dionne, no unquestionable set of quintuplets has survived as such for more than fifty minutes At the time of writing the Canadian quintuplets, weighing a total of thirteen pounds at birth, have traveled in each other's company, their ranks unbroken, through this vale of tears for fifteen days Perhaps they are aware of their goal and are striving for its attainment—exhibitionism on a family pedestal in the World's Fair at Chicago

According to Professor Alan F. Guttmacher of Johns Hopkins University, multiple births are most likely to occur between the ages of thirty-five and forty The mother of our present quintuplets is an exception to the rule, boasting only twenty-four summers, seven less than her husband The rarity of birth multiplicity increases, obviously, with the number of babes at the birth W. W. Greulich of the University of Colorado studied 100,000,000 births, establishing one in 87 as the chance for twin births The square of 87, or 7,569 gives the chances in favor of triplets, its cube, or 658,503 the chances in favor of quadruplets If this rule continues to hold true in the higher registers, quintuplets should make their appearance once in every 57,289,761 births!

The chances of all five surviving the period of infant mortality, at this rate, would require an array of digits so far known only to astronomy

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MISCELLANY

BOSTON MEDICAL LIBRARY

The settling of an estate has provided an exceptional opportunity for the procuring of a lot of twenty-one manuscripts and incunabula for the Bulard and Hyams Collections

Two notable and exceedingly important manuscripts are included in the lot the "De proprietatibus rerum" of Bartholomaeus Anglicus and the Organon or Logica of Aristoteles Both of these books were common textbooks in the Middle Ages, and essential for all scholars

The manuscript of Bartholomaeus is a very large work of 298 leaves of vellum and probably was written in the North of Spain in the last part of the thirteenth century It is said to be from the Abbey of Leyre in Spanish Navarre and is in the original binding of deerskin over wooden boards with primitive iron bosses The end leaves used in the binding are parts of a vellum manuscript of the decretals of Gregory X. The text is a good one and well written

Bartholomaeus Anglicus was a Franciscan who was born in England and who flourished in the thirteenth century from about 1220 to at least 1250 A.D. His encyclopedia, which was written about 1230 to 1240, was for the plain people and was entitled "The properties of things" It was written in Latin and

based on the Bible, and while its aim was primarily theological and philosophical, it had much of natural history in its contents. It was comprehensive and methodical.

The work is divided into nineteen books which may be roughly designated as follows: 1. God, 2. angels and demons, 3. psychology, 4-5. physiology, 6. family life, 7. medicine, 8. cosmology and astrology, 9. time divisions, 10. form and matter and elements, 11. air and meteorology, 12. flying creatures, 13. waters and fishes, dolphins and whales, 14. physical geography, 15. political geography, 16. gems, minerals and metals, 17. trees and herbs, 18. animals, 19. color, odor, savor, food and drink, eggs, weights and measures, musical instruments. According to Sarton, the medical chapter is largely derived from Constantinus Africanus and the Herbal by far the most notable work of its kind written by an Englishman in the Middle Ages.

The work was very popular and was translated in the manuscript period into Italian, French, English, Spanish and all of these translations were published in incunabula editions. Fifteen editions were printed in Latin alone during the fifteenth century and it continued to be printed until the early part of the seventeenth century. It was one of the books made available to Paris students for a definite period.

Aristotelian logic was a primary subject in the curriculum of the schools and universities of the Middle Ages. The manuscript in the Library contains the usual course in logic, part of which is in the version of Boethius. It is written in good cursive hand on 111 leaves of vellum and is probably an Italian fourteenth century work. There are numerous interlinear and marginal notes in several hands, contemporary with the manuscript and later. It contains many erasures and corrections of the text, mostly in a hand not much later than that of the manuscript.

The initials are in red and green, with edges prolonged to form borders, and some have primitive grotesque ornaments like Italian work of the fourteenth century.

The text closely approximates that of the first printed edition of the *Organon* (Naples, 1473-78).

The *"Libro delle consolazione delle medicine"* of Joannes Mesne Junior, printed at Modena, 1475, is a very important and very rare incunabulum. It is the first edition of the Italian translation of the celebrated and popular work of Iesue and the first large medical book in the Italian language. The *Grabadin* or apothecary's manual of the pseudo-Mesue was very popular in the Middle Ages. The Latin printing of 1471 shares with the two Jenson tracts of the same year the honor of being the first dated medical books.

Volume one of the *"Rosarium sermonum"* of Bernardino de Bustis, Venice, 1498, contains an important sermon on the pest entitled *"De pestilente signis causis et remediis"*. In this sermon many medical authorities are quoted among which

may be mentioned, Hippocrates, Galen, Haly Abbas, Averroes, Albertus Magnus, Petrus de Abano, Aristoteles and Avicenna. Mention also is made of the great plague at Milan in 1451.

The *"Sermones quadragesimales"* of Robertus Caracciolus, Venice, 1479, contains an elaborate discussion of circumcision and a long sermon on pestilence in which the author is less concerned with the disease itself than with the sins for which he regards it as a chastisement. The sermon on women is curious, to say the least, and he gravely discusses whether women were produced with the other animals or made from man or made directly by the Divine Creator.

Other interesting works in the lot are the *"Mariale"* of Albertus Magnus (Basel, 1475), in which the miraculous conception of the Virgin is discussed in nine chapters and really has to do with generation, and the *"Homiliae"* of Gregory the Great, Venice, 1493, containing the famous homily against the astrologers. The collection of tracts of Petrus de Abano, Arnoldus de Villa Nova and Valascus de Taranta, on poisons and the pest, Padua, 1487, is an important medical work.

Strabo's *"Geographia"*, Venice, 1494, Dionysius Periegetes, *"Cosmographia"*, Venice, 1498, and Petrus de Cruce, *"Questio de ratione subjecti primi scientiae"*, Venice, 1500, are important scientific books.

The *"Cato moralisatus"* with the commentary of Philippus de Pergamo, commonly known as the *"Speculum regiminis"*, Lyon, 1497 and 1498, is a rare edition and contains much of medical interest. The commentator lived at Padua where there was a great medical school and he had much to say about medicine, and more about doctors, much of it is complimentary.

Two classical texts are the *"Facta et dicta memorabilia"* of Valerius Maximus, Venice, 1474 and the commentary of Dionysius de Burgo, on the same work, printed by the R printer of Strassburg about 1471. The last is very interesting from a typographical point of view. Dionysius devotes considerable space to a legend of Aesculapius and twenty-eight pages to dreams. He also discusses at length the question of death, both real and apparent.

REPORT OF THE MEDICAL SERVICE BOARD OF THE AMERICAN COLLEGE OF SURGEONS, JUNE 10, 1934

The Medical Service Board of the American College of Surgeons respectfully submits the following report to the Board of Regents:

1. The American College of Surgeons affirms its interest and its desire to cooperate with other agencies looking toward the provision of more adequate medical service to the whole community.

2. The College believes that it is the duty of the medical profession to assume leadership in this movement and to take control of all measures directed to this end.

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MINIMUM STANDARD FOR INDUSTRIAL MEDICINE
AND TRAUMATIC SURGERY

1 That the industry shall have an organized medical department, or service with competent medical staff including consultants and adequate emergency dispensary and hospital facilities and personnel to assure efficient care of the ill and injured

2 That membership on the medical staff shall be restricted to physicians and surgeons who are (a) graduates of scientific medicine holding the degree of Doctor of Medicine in good standing and licensed to practice in their respective states or provinces (b) competent in the field of industrial medicine and traumatic surgery (c) worthy in character and in matters of professional ethics that in the latter connection the practice of the division of fees under any guise whatsoever be prohibited

3 That there shall be a system of accurate and complete records filed in an accessible manner—a complete record being one which includes identification data cause of illness or injury nature and extent of illness or injury detailed description of physical findings special examinations such as consultations clinical laboratory and x-ray tentative or provisional diagnosis treatment prognosis with estimated period of disability progress of illness or injury final diagnosis condition on discharge end results and such additional information as may be required by statute for Workmen's Compensation claims or for other purposes

4 That all patients requiring hospitalization shall be sent to institutions approved by the American College of Surgeons

5 That the medical department shall have general supervision over the sanitation of the plant and the health of all employees

b Physicians and surgeons qualified as in paragraph 2 of the above minimum standard may properly be employed on a full time or a part time basis by industrial organizations to provide medical and surgical service for their employees as follows

i To provide emergency service and first aid in injury or disease and to provide adequate medical or surgical care for industrial injuries and diseases Medical and surgical care of the families of employees and of employees themselves except for emergency and industrial injuries and diseases should be provided by the industrial physician only in remote districts where other adequate medical service is not available

ii To provide pre-employment and periodic physical examinations

iii To study the hazards of the particular industry and to cooperate with other agencies in effecting such measures as may be needed for the prevention of injury and disease

iv To keep accurate records such as may be required by local Workmen's Compensation laws, and so complete as to serve for scientific investigation of industrial hazards with a view to their further prevention These records are privileged communications, subject always to due process of law

c The sale of a contract by an industrial organization to an individual physician or group of physicians for medical and/or hospital service for its employees encourages commercial competition and is to be condemned

d Unethical practices in publicity, advertising solicitation, and competition either of a professional or of a financial nature, must be eliminated

e The accepted code of ethics of the medical profession which is designed to protect the best interests of the patient should apply to industrial medical service as to all other forms of medical practice

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THE CONDITIONS AT THE
BROOKLINE TUBERCULOSIS HOSPITAL

About May 1 a patient at the Brookline Tuberculosis Hospital sent a letter to the Board of Health complaining of the food at the Hospital. The complaint was referred to Dr. Francis P. Denny, the Health Officer and Medical Director of the Hospital for investigation. Dr. Denny reported that as a result of his investigation he was satisfied that the food was good. A second letter from the same patient was received on May 21, and on adjournment four members visited the Hospital without warning to the staff just at the time of the evening meal. Opportunity was given to all the patients to say what they thought of the food. After their visit the members of the Board expressed their satisfaction with the conditions which they found at the Hospital.

The day following the patient who had made the complaint left the Hospital and stated to the press that he would not return until the cook at the Hospital had been discharged. He drew up a petition to the Board which was signed by eleven other patients requesting that the cook be discharged.

At its meeting on June 4, after a conference with the Superintendent, Miss Elizabeth McMahon and Dr. Denny, the Board voted unanimously to take no action on the petition.

3 Encouragement should be given to the trial of new methods of practice designed to meet these needs and a careful evaluation of their success should be the duty of the medical profession before they are offered for general adoption. All such new and experimental methods of practice must be conducted strictly in accordance with the accepted code of ethics of the medical profession in order that the interests of the patient and of the community may be protected.

4 The College recognizes for immediate study four groups of the population for whom more adequate medical service should be made available as follows:

- a The indigent.
- b The uneducated and credulous members of the community.
- c Those who because of limited resources are unable unaided to meet the costs of serious illness and hospitalization.
- d Those living in remote districts where adequate medical service is not obtainable.

5 The care of the indigent sick should be a direct obligation upon the community and (unless otherwise compensated by intangible benefits such as staff and teaching appointments, opportunity and experience) physicians fulfilling this public service should receive remuneration.

6 The College should work in cooperation with other medical groups in order to dispel the ignorance and credulity of the public and to bring the people to a proper realization of the protective and curative resources of modern medicine.

7 The American College of Surgeons recognizes that the periodic pre-payment plan providing for the costs of medical care of illness and injury of individuals and of families of moderate means offers a reasonable expectation of providing them with more effective methods of securing adequate medical service.

A number of different plans for the organization of such services have been proposed although few have been in operation long enough to permit definite conclusions in regard to their success. It is to be desired that these experiments be continued. Conditions differ to such a degree in different parts of the country that a specific plan which is practicable in one place may require modification of details in other communities. The varying restrictions imposed by present insurance laws in different states further complicate the problem.

Periodic pre-payment plans providing for the costs of medical service may be divided into two classes:

- A Payment for medical service
- B Payment for hospitalization

It is suggested that plans for the payment of hospitalization alone (Class B) without provision for payment for medical service, may be considered the first project to be undertaken in the average community.

The American College of Surgeons believes that certain general principles can and should be established, the observance of which will tend to obviate known difficulties and dangers which may threaten the success of these special forms of medical service. These principles are as follows:

- a Periodic pre-payment plans for medical service should be free from the intervention of commercial intermediary organizations operating for profit. After deduction of the clerical costs of operation of the fund and such accumulation of reserve as may be advisable in the interest of the contributors or may be legally imposed, the full amount paid by the contributors should be available for medical and hospital services.
- b In the interest of the patient the organization of plans for the periodic payment of medical and hospital costs must be under the control of the medical profession. The medical profession must act in concert with the hospitals and such other allied services as may be involved in the individual project together with a group of citizens representative of the whole community and of industry who are interested in the successful operation of the plan.
- c The principle of free choice of the physician and hospital by the patient must be assured to the end that the responsibility of the individual physician to the individual patient shall always be maintained. When hospitalization is required, this choice must of necessity be limited to the physicians and surgeons who hold appointments on the staffs of the hospitals participating in the plan or to those physicians and surgeons who are acceptable to the hospital. It is further recommended that only approved hospitals be admitted to participation in such a plan.
- d The compensation of the physician and of the hospital should be estimated with due regard to the resources available in the periodic payment fund and should be based upon the specific services rendered.
- e The organization and operation of any plan of this type must be free from any features not in accordance with the code of ethics of the medical profession which code has been established for the protection of the patient.
- f The medical organizations participating in such a plan must assume the responsibility for the quality of service rendered.

8 Periodic pre-payment plans for medical and hospital service should eliminate many of the conditions which have brought about the development of industrial contract practice. Until such plans have been more widely established, certain general principles are here formulated with a view to the elimination of the commercial features of such forms of medical service.

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- 4 That all patients requiring hospitalization shall be sent to institutions approved by the American College of Surgeons.
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It is suggested that plans for the payment of hospitalization alone (Class B) without provision for payment for medical service may be considered the first project to be undertaken in the average community.

The American College of Surgeons believes that certain general principles can and should be established, the observance of which will tend to obviate known difficulties and dangers which may threaten the success of these special forms of medical service. These principles are as follows:

- a. Periodic pre-payment plans for medical service should be free from the intervention of commercial intermediary organizations operating for profit. After deduction of the clerical costs of operation of the fund and such accumulation of reserve as may be advisable in the interest of the contributors or may be legally imposed the full amount paid by the contributors should be available for medical and hospital services.
- b. In the interest of the patient, the organization of plans for the periodic payment of medical and hospital costs must be under the control of the medical profession. The medical profession must act in concert with the hospitals and such other allied services as may be involved in the individual project, together with a group of citizens representative of the whole community and of industry who are interested in the successful operation of the plan.
- c. The principle of free choice of the physician and hospital by the patient must be assured to the end that the responsibility of the individual physician to the individual patient shall always be maintained. When hospitalization is required, this choice must of necessity be limited to the physicians and surgeons who hold appointments on the staffs of the hospitals participating in the plan or to those physicians and surgeons who are acceptable to the hospital. It is further recommended that only approved hospitals be admitted to participation in such a plan.
- d. The compensation of the physician and of the hospital should be estimated with due regard to the resources available in the periodic payment fund and should be based upon the specific services rendered.
- e. The organization and operation of any plan of this type must be free from any features not in accordance with the code of ethics of the medical profession which code has been established for the protection of the patient.
- f. The medical organizations participating in such a plan must assume the responsibility for the quality of service rendered.

8 Periodic pre-payment plans for medical and hospital service should eliminate many of the conditions which have brought about the development of industrial contract practice. Until such plans have been more widely established certain general principles are here formulated with a view to the elimination of the commercial features of such forms of medical service.

- a The Minimum Standard for Industrial Medicine and Traumatic Surgery of the American College of Surgeons should be accepted. This standard is as follows

MINIMUM STANDARD FOR INDUSTRIAL MEDICINE
AND TRAUMATIC SURGERY

- 1 That the industry shall have an organized medical department or service with competent medical staff including consultants and adequate emergency dispensary and hospital facilities and personnel to assure efficient care of the ill and injured
- 2 That membership on the medical staff shall be restricted to physicians and surgeons who are (a) graduates of scientific medicine holding the degree of Doctor of Medicine in good standing and licensed to practice in their respective states or provinces (b) competent in the field of industrial medicine and traumatic surgery (c) worthy in character and in matters of professional ethics that in the latter connection the practice of the division of fees under any guise whatsoever be prohibited
- 3 That there shall be a system of accurate and complete records filed in an accessible manner—a complete record being one which includes identification data cause of illness or injury nature and extent of illness or injury detailed description of physical findings special examinations such as consultations clinical laboratory and x-ray tentative or provisional diagnosis treatment prognosis with estimated period of disability progress of illness or injury final diagnosis condition on discharge end results and such additional information as may be required by statute for Workmen's Compensation claims or for other purposes
- 4 That all patients requiring hospitalization shall be sent to institutions approved by the American College of Surgeons
- 5 That the medical department shall have general supervision over the sanitation of the plant and the health of all employees
- b Physicians and surgeons qualified as in paragraph 2 of the above minimum standard may properly be employed on a fulltime or a part time basis by industrial organizations to provide medical and surgical service for their employees as follows
 - i To provide emergency service and first aid in injury or disease and to provide adequate medical or surgical care for industrial injuries and diseases Medical and surgical care of the families of employees and of employees themselves except for emergency and industrial injuries and diseases should be provided by the industrial physician only in remote districts where other adequate medical service is not available
 - ii To provide pre-employment and periodic physical examinations
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- c The care of the organization to be organized of physicians to be service for the commercial companies
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- e The accepted code of profession which is the interests of the industrial medical service of medical practice

MEDICAL SERVICE BOARD

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THE CONDITIONS AT THE
BROOKLINE TUBERCULOSIS HOSPITAL

About May 1 a patient at the Brookline Tuberculosis Hospital sent a letter to the Board of Health complaining of the food at the Hospital. The complaint was referred to Dr. Francis P. Denny, Jr., Health Officer and Medical Director of the Hospital for investigation. Dr. Denny reported that as a result of his investigation he was satisfied that the food was good. A second letter from the same patient was received on May 21, and on adjournment four members visited the Hospital without warning to the staff just at the time of the evening meal. Opportunity was given to all the patients to say what they thought of the food. After their visit the members of the Board expressed their satisfaction with the conditions which they found at the Hospital.

The day following the patient who had made the complaint left the Hospital and stated to the press that he would not return until the cook at the Hospital had been discharged. He drew up a petition to the Board which was signed by eleven other patients requesting that the cook be discharged.

At its meeting on June 4 after a conference with the Superintendent Miss Elizabeth McMahon and Dr. Denny the Board voted unanimously to take no action on the petition.

3 Encouragement should be given to the trial of new methods of practice designed to meet these needs, and a careful evaluation of their success should be the duty of the medical profession before they are offered for general adoption. All such new and experimental methods of practice must be conducted strictly in accordance with the accepted code of ethics of the medical profession in order that the interests of the patient and of the community may be protected.

4 The College recognizes for immediate study four groups of the population for whom more adequate medical service should be made available, as follows:

- a The indigent.
- b The uneducated and credulous members of the community.
- c Those who because of limited resources are unable, unaided, to meet the costs of serious illness and hospitalization.
- d Those living in remote districts where adequate medical service is not obtainable.

5 The care of the indigent sick should be a direct obligation upon the community and (unless otherwise compensated by intangible benefits such as staff and teaching appointments, opportunity and experience) physicians fulfilling this public service should receive remuneration.

6 The College should work in cooperation with other medical groups in order to dispel the ignorance and credulity of the public, and to bring the people to a proper realization of the protective and curative resources of modern medicine.

7 The American College of Surgeons recognizes that the periodic pre-payment plan providing for the costs of medical care of illness and injury of individuals and of families of moderate means offers a reasonable expectation of providing them with more effective methods of securing adequate medical service.

A number of different plans for the organization of such services have been proposed, although few have been in operation long enough to permit definite conclusions in regard to their success. It is to be desired that these experiments be continued. Conditions differ to such a degree in different parts of the country that a specific plan which is practicable in one place may require modification of details in other communities. The varying restrictions imposed by present insurance laws in different states further complicate the problem.

Periodic pre-payment plans providing for the costs of medical service may be divided into two classes:

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- iv To keep accurate records such as may be required by local Workmen's Compensation laws, and so complete as to serve for scientific investigation of industrial hazards with a view to their further prevention These records are privileged communications, subject always to due process of law
- c The sale of a contract by an industrial organization to an individual physician or group of physicians for medical and/or hospital service for its employees encourages commercial competition and is to be condemned
- d Unethical practices in publicity advertising solicitation, and competition either of a professional or of a financial nature, must be eliminated
- e The accepted code of ethics of the medical profession which is designed to protect the best interests of the patient should apply to industrial medical service as to all other forms of medical practice

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AN HONOR TO DR. HARVEY CUSHING

Among the honorary degrees awarded by Syracuse University, Dr Harvey Cushing of Yale University Medical School was the recipient of the degree of LL D

MORTALITY RATES

Telegraphic returns from 86 cities, with a total population of thirty-seven millions for the week ending June 2, indicate a mortality rate of 112 as against a rate of 100 for the corresponding week of last year. The highest rate (248) appears for Schenectady, N Y, and the lowest (59) for South Bend, Ind. The highest infant mortality rate (261) appears for San Antonio, Texas, and the lowest for Bridgeport, Conn., Duluth, Minn., Evansville, Ind., Louisville, Ky., South Bend, Ind., Syracuse, N Y, and Tampa, Fla., which reported no infant mortality.

The annual rate for 86 cities is 123 for the twenty two weeks of 1934, as against a rate of 117 for the corresponding period of the previous year.

SUMMARY OF DEATHS AND DEATH RATES (ANNUAL BASIS)
FROM AUTOMOBILE ACCIDENTS PER 100,000 ESTIMATED
POPULATION FOR 86 CITIES FOR CORRESPONDING PERIODS
OF 1934 AND 1933

	Week ending		First 22 weeks	
	June 2, June 3,		1934	1933
	1934	1933		
Total deaths	178	133	3,464	3,027
Death rate	248	185	219	192
Deaths due to ac-				
cidents in city	135	104	2,802	2,427
Death rate	188	145	177	154

—Bureau of the Census

EXTRACTS FROM THE JUNE BULLETIN OF THE
NATIONAL TUBERCULOSIS ASSOCIATION

DR DUNHAM, *President*

Dr Kennon Dunham of Cincinnati, whose work for many years in the field of x-ray diagnosis of tuberculosis has been outstanding, and who has contributed much to the whole movement, was elected president of the Association.

TRUDEAU MEDAL

The Trudeau medal was awarded to Dr William Snow Miller of Madison, Wisconsin. In announcing the award Dr Esmond R Long, chairman of the committee, spoke of Dr Miller's lifelong and outstanding research in the anatomy of the lung and chest.

TIMELY WARNINGS

Past experience has shown that the incidence of poliomyelitis is likely to begin in June and progress through the summer months.

The Fourth of July brings a crop of casualties which are largely preventable, and the mortality from drowning is now well underway.

The family physician may well warn parents of the dangers incident to warm weather and the vacation periods.

Although typhoid is a declining menace, there will be sporadic cases and there is always a danger from a carrier. The doctor may tell his families about those dangers, and give timely advice, especially urging early medical service in every case of illness.

CORRESPONDENCE

DISCUSSION OF AFFAIRS AT THE BOSTON
CITY HOSPITAL

June 11, 1934

Editor of the Journal,

Dear Sir,

The editorial in this issue of the *Journal*, relative to the Boston City Hospital, seems in conflict with the "Accepted Resolutions" of the Norfolk District Medical Society, and the Council, which by a unanimous vote accepted and approved said Resolutions.

The Finance Commission of Boston has done a notable work in bringing before the public the injustice that has been perpetrated, on the medical profession of Boston, by the Boston City Hospital.

The Committee from the Norfolk District was well aware of the unfair competition in the O P Dept. The Committee saw numbers of well-to-do people attend the Clinics, come in expensive cars, walk in and not pay a cent, and no questions asked, all at the expense of the taxpayers.

The irony of the affair is, that most of the doctors are taxpayers; they are supplying the wherewithal to destroy their own means of making a livelihood, and the doctors ministering to these well-to-do patients are destroying their own business as well as that of their fellows.

What an injustice it is to the taxpayers of Boston to have to support, in the hospital proper, patients who are perfectly able to pay politicians and their friends, clients of insurance companies who pay little or nothing for treatment and board.

When we consider the fact that the Boston City Hospital, in conjunction with some other hospitals in Boston, has about ruined the profession by unfair practices, and that much of the unfair competition has been done, outside the Charter of the City Hospital, that is illegally, it seems that the *Journal* should condemn such practices, instead of suggesting a legal means of continuing the present unjust course, as regards both the physician and the taxpayer.

CHARLES MALONE, M D

46 St John Street
Jamaica Plain, Mass

SHALL WE WAIT FOR THE PUBLIC TO ACT?

Massachusetts General Hospital Boston

Editor, *New England Journal of Medicine*,

I am enclosing an editorial which I gleaned from Wednesday's *Cleveland Press*. It seems to me to be a thoroughly just and intelligent criticism of the official American Medical Association attitude. This attitude certainly bears a very striking resemblance to old guard Republicanism. It is a form of unenlightened standpointism thoroughly out of tune with the times. It is the kind of attitude that quite naturally leads the public to brand the American Medical Association the "Doctors Trust." Both the profession and the public are to be congratulated that in the *New England Journal* we have openmindedness and constructive leadership. Would that we might say the same of the national organ.

Sincerely yours,

J. H. MEANS, M.D.

June 15 1934

EDITORIAL

CONSERVATIVE DOCTORS

If the resolutions of the American Medical Association read somewhat like the resolutions of an old guard Republican campaign committee, it is for like reasons.

They wish the depression hadn't happened and they can hardly believe that it did. And they like to believe that if we just sit tight and let nature take its course nothing like it will ever happen again. They hope that the free play of economic forces will again make everybody prosperous—prosperous enough to pay their doctors bills, anyhow—and permanently prosperous, next time.

One can sympathize with the fear physicians feel toward any scheme in which government officials, politicians, insurance company executives or somebody would be bossing the doctors.

But how prevent the spread of public clinics, hospitals and insurance plans as long as millions of people cannot pay for medical care?

The doctors will not go so far as to say that all our public hospitals and public clinics now in existence ought to be abandoned. But they are reluctant to see them multiplied.

Perhaps it all comes down to one's view of the probabilities about the future volume of unemployment in America. For the time being the doctors who can afford to attend conventions prefer to believe that everybody is soon going to be prosperous again. They do not wish to see a permanent expansion of public institutions based on a temporary emergency.

If on the other hand the economic status of a very large fraction of the population is going to continue uncertain government will inevitably be drawn deeper into the effort to make that first essential—medical care in time of sickness—more certain through collective action.

To us it would seem wiser for the medical profession, instead of trying to preserve a status that has not actually existed for years to take the lead in formulating a plan whereby the burden of costs could be reduced or distributed without impairing the professional control of its own activities.

If the doctors wait until some one else forces a scheme upon them it may be less to their liking and less satisfactory in its results.—*Cleveland Press*

PUBLICITY OF MEDICAL MATTERS

St. Elizabeth's Hospital
736 Cambridge Street
Brighton, Mass.

May 29, 1934

Editor, *New England Journal of Medicine*

My attention was directed by the Committee on Ethics and Discipline, of the Massachusetts Medical Society, to an article published in the *Boston Herald* February 16, 1934, wherein my name appeared quite prominently in a medical "write-up."

This article was written by a young lady who three months previously presented herself at the Clinic and sought permission to remain as an observer. She said she had visited and observed in several hospitals being interested especially in reconstruction work.

I granted her permission to remain after I had first explained our standard of ethics as it pertains to publicity and had warned her that I was not to be quoted or my name used under any condition, in the public press. Further than this I had no knowledge or connection in any way with the publication of this article.

I am glad to support the Committee on Ethics and Discipline in its efforts to curb publicity and wish to state that I regret most sincerely this undesired publicity and that I am opposed to all forms of medical "write-ups."

Yours truly,

THOMAS J. BRODERICK, M.D.,
Orthopedic Department

A PROTEST AGAINST THE 'FREE ABSTRACT JOURNALS' PUBLICATIONS

Clinical Medicine and Surgery

June 6 1934

The Editor,

New England Journal of Medicine,

The time appears to have arrived when, if we do not want to see our living carried off before our eyes by commercial exploiters of the legitimate medical press we must make a concerted effort to stop it.

The so-called "Free Abstract Journals" (whose names are familiar to you) could not exist if they were unable to act as parasites upon the sound and scientific medical periodicals whose editors and publishers spend the time, brains and money to se-

lect, arrange and present the material which these people appropriate for their purposes

If these purveyors of predigested professional pabulum carry their plans to fruition—if we permit them to do it—we, who are depending for our livelihood upon furnishing the medical profession with information will find many of our subscribers and most of our advertisers leaving us for the pages of these sheets which could not live for one moment except upon us

I have forbidden the publishers of the periodicals to which I allude to reprint or abstract any original communications appearing in the pages of *Clinical Medicine and Surgery*, and am copyrighting each issue of our journal, beginning with the June, 1934, number. This will not affect you nor any other journal publishing original articles or having a paid subscription list. You may abstract from our pages as freely as you please. If the editors and publishers of most of the responsible and reputable medical journals in the country would do the same, we would have the situation well in hand.

What are your reactions to this suggestion?

May I count upon your support in this matter?

In what way or ways can I cooperate with you to make our positions in the medico-literary field secure from pirates?

Sincerely and fraternally yours,

GEORGE B LAKE, M.D.,

Editor and Publisher

P.S. My strictures do not apply to *Medical Economics*, which is a properly edited journal, publishing original material in its special field and not competing with us, except in the legitimate manner of an honorable contemporary.

REPORTS AND NOTICES OF MEETINGS

THE HARVARD MEDICAL SOCIETY

The Harvard Medical Society met in the amphitheatre of the Peter Bent Brigham Hospital on Tuesday, May 8, at 8 15 P.M. Dr. Walter B. Cannon presided. Following the presentation of clinical cases, some aspects of the peripheral vascular circulation were discussed by Drs. James C. White and Norman E. Freeman from the Surgical Service of the Massachusetts General Hospital.

The first clinical case was that of a boy who had been shown at a previous meeting. He had always been less active than his playmates and evidenced splenomegaly at the age of five. He experienced no real illness until March 20 of this year when a cough and intermittent fever developed. This was followed by severe repeated hematemeses at the second of which he entered the Peter Bent Brigham Hospital on the Medical Service. The spleen was palpable below the umbilicus. The red blood cell count was one and a half millions with a hemoglobin of 32 per cent. The white blood cell count was 6000.

He was treated for hemorrhage and subsequent anemia with iron and intramuscular liver extract. At the time of the meeting the red blood cell count had become essentially normal and the white blood cell count was 2500 with no abnormal cells present. The case was transferred to the surgical service for splenectomy.

The x-ray studies in this case are of especial interest. At entry the chest plates showed a picture of bronchopneumonia which may have been due to aspirated blood. A month later plates showed normal lung fields thereby eliminating tuberculosis. After ingestion of a thick barium mixture, the negative shadow of a rounded long object was demonstrated in the esophagus resembling a foreign body, which is the first case of varicose vein of the esophagus demonstrated by x-ray at this hospital. Dr. Sosman stressed the point that the film should be exposed from thirty to sixty seconds after administration of the thick barium so that the esophagus is merely coated with the radio-opaque substance.

The second case was that of a forty-five year old Italian housewife who first entered the hospital in November, 1932, with a history of swelling behind the left knee of three months duration. Sharp stabbing non-radiating pain had occurred in the same region five years previously. Treatment for neuritis had been instituted by a local doctor. A nodular mass the size of a lemon lay medially behind the left knee. There was reddening of the overlying skin. The chest plates were reported negative. A cystic mass was removed at operation which upon histological examination proved to be an hemangio-endothelioma. Following the operation a course of x-ray treatments was given.

In December, 1933, the patient returned to the hospital with a mass in the incisional scar, which later was observed to be fluctuating in size and tenderness. The patient was readmitted to the hospital shortly before the meeting. On examination, the mass in the site of the old scar was found freely movable above but fixed below. No lesions were observed in the groin, but x-ray examination revealed soft tissue shadows in the lateral portion of the right lung and the left apex which Dr. Sosman believes represent definite pulmonary metastases. Dr. Homans recalled a previous case in a boy and made the observation that tumors of this nature go on harmlessly for a long time only to become malignant after surgical intervention.

The first speaker of the evening was Dr. James C. White, who discussed 'Studies on the Innervation of the Vessels and Their Application to Neurovascular Surgery'. In reviewing the results in cases of Raynaud's disease in the Circulatory Clinic at the Massachusetts General Hospital, Dr. White pointed out that surgery has been most successful in relieving symptoms in the lower extremities by excision of the second to fourth lumbar sympathetic ganglia. Failure to relieve symptoms in the upper

extremities in the first fifteen cases was due to in complete sympathetic denervation followed by regeneration of the nerve fibers and return of symptoms after six to eight months. The possibility of regeneration was removed in the later operations for the condition by excision of the inferior cervical and the first two thoracic ganglia. After a short period of vasodilatation even these patients showed a skin temperature in the hands of 78° F (room temperature 70° F), while that of the feet after sympathetic denervation was 90° F in the same environmental temperature.

Dr White explained this phenomenon by T. R. Elcott's work done in England in 1905 and recently reemphasized by Dr Cannon. This has brought out the surprising fact that smooth muscle becomes sensitized to the action of adrenin after severance and degeneration of its postganglionic sympathetic neurones. The possibility that the denervated smooth muscle in the digital arterioles can be constricted by circulating hormones was first investigated by Smithwick, Freeman and White in patients after unilateral sympathetic denervation of the upper extremities for Raynaud's disease. Injections of adrenalin (1 to 200,000) produced a striking fall in the skin temperature of the previously denervated hand but no detectable fall in the limb with intact autonomic nerve supply. To test whether the patient secreted enough adrenin from his own glands to have any effect on the denervated sensitized blood vessels insulin was injected to produce a hypoglycemia which stimulates the sympathico-adrenal system. The same effect was observed as after the injection of adrenalin. More recently these observations have been repeated on rabbits in which one ear had been totally denervated. After a preliminary paralysis the denervated ear became hypersensitive to agents calling into play the sympathico-adrenal system. In addition the speaker reported that the phenomena of sensitization disappear almost entirely after extirpation of the adrenals. What remains of the effect may be due to the intrinsic tone of the blood vessels themselves and possibly to the action of sympathin.

Dr White further declared that studies similar to those mentioned above have revealed the fact that no sensitization of the lower extremities occurs comparable to that shown to exist in the upper extremities after sympathetic denervation. This he explained from an anatomical point of view. In the operation at present employed for sympathetic denervation of the upper extremities by the excision of the inferior cervical ganglion and the first two thoracic ganglia, the surgeon removes cell bodies for the entire postganglionic nerve supply to the upper extremities except for a few fibers entering the brachial plexus through the fifth cervical nerve. Hence practically the entire vascular supply of the hand is sensitized to the action of adrenin after time has been allowed for degeneration of the nerve fibers. In the lower extremity however removal of

the second to fourth lumbar ganglia destroys only the preganglionic fibers supplying the leg via the anterior femoral and obturator nerves. The cell bodies for the postganglionic fibers in the sciatic nerve, which is the important supply to the foot, are located in the fourth lumbar to third sacral ganglia. Thus lumbar ganglionectomy essentially interrupts only the preganglionic innervation of the lower leg.

Dr White concluded his address with the suggestion that section of the preganglionic fibers to the upper extremity might be obtained by cutting the upper anterior thoracic roots. This should lead to paralysis of only a part of the intercostal muscles. He is at present planning to investigate this procedure in the rabbit.*

Dr Norman E. Freeman, the second speaker, spoke on 'Factors Controlling the Peripheral Blood Flow in Man'. A modification of the method of Hewitt and Van Zwaluwenburg was used to determine the blood flow in the hand. The apparatus is built on the plethysmograph principle the cylinders being modified calorimeters in which the temperature can be kept constant within very narrow limits. In measuring the blood flow in human hands the venous return from the hand is obstructed at the wrist by a modified blood pressure cuff by which the pressure is kept just below diastolic. The hands are inserted into the calorimeter and the change in hand volume per unit of time recorded on a smoked drum through a closed lever system. While records are being taken emotional disturbances, noise, pain and worry must be eliminated because they reduce the peripheral flow very significantly. The patient must also be in basal condition with respect to digestion and exercise.

By means of lantern slides Dr Freeman showed the various well known vasomotor reflexes mediated through the sympathetic nervous system such as a diminished blood flow when too rapid a loss of heat was threatened and an increased blood flow on heating the body whether by the application of external heat or by increasing the internal metabolism through dinitrophenol.

In Raynaud's disease Dr Freeman showed an increase in blood flow in the affected hand after novocaine block of the sympathetic nerves even though the temperature of the hand was maintained at a low level. The blood flow in the completely sympathetomized hand immediately after operation is at a high level and is influenced very little by local changes in temperature. Some time later, however, the blood flow varies directly with the local temperature. It was shown that the rate of blood flow was a function of temperature according to laws of chemical reactions.

Dr Freeman also made the interesting observation that by exercising the hand for two minutes or

*Since the meeting it has been found that after section of the preganglionic neurones in the upper thoracic anterior spinal roots the vessels in rabbit's ear remain in a constant state of vasodilatation. After this operation the arteries are no longer affected by hormones circulating in the blood stream.

by occluding its blood supply for ten minutes, a blood flow debt was incurred by the tissues which was subsequently paid by a proportionately increased blood flow in the hand. From previous work on the effect of decreased oxygen concentrations on the tone of arteries, it seems that increased blood flow is probably due to an oxygen debt rather than to the accumulation of metabolites locally.

Dr Freeman was able to make a quantitative analysis of the blood flow in a sympathectomized hand at different temperatures. If at a certain temperature of the hand a tourniquet was applied for five minutes and again for ten minutes, following the release of the tourniquet, the excess blood flow above the basal flow after the ten minute occlusion was double that following the five-minute occlusion. Again, if the basal flow at three different temperatures was determined and a blood flow debt of ten minutes created by occlusion of the circulation at each temperature, the excess blood flow at each temperature was equal, within the experimental limits, to the size of the debt.

In conclusion, the speaker pointed out that the function of the peripheral blood flow from the point of view of general bodily economy is to regulate the temperature of the body. It is estimated that 85 per cent of the body heat is dissipated by the extremities reflexly. After sympathetic denervation, however, the peripheral blood flow is apparently determined by the actual needs of the local tissues. With these facts in mind, it becomes illogical to apply local heat in cases of peripheral vascular disease such as diabetic arteriosclerosis and thromboangiitis obliterans in which the vascular supply to the extremities is incompetent, because heat would merely increase the demand for a greater rate of blood flow. It is often observed clinically that such patients complain of pain when heat is applied to the extremities.

Following a discussion by Drs Drinker, Homans, and Cutler, the meeting was adjourned.

PLYMOUTH DISTRICT MEDICAL SOCIETY

A stated meeting of the Plymouth District Medical Society was held at the Brockton Hospital, May 17, 1934. The meeting was called to order by the President, Dr Alley, at 11 15 A.M. The minutes of the last meeting were read and approved.

The President then turned the meeting over to Dr Barrett who had charge of the literary program prepared by the Staff of the Hospital. A series of short clinical papers was presented by members of the Brockton Hospital Staff.

Dr Loring Packard demonstrated a series of x ray films, showing the normal anatomy of the heart and lungs and a number of unusual pathological conditions.

Dr J. R. Noyes showed a patient who entered with such a severe fracture of all bones of the face that the hard palate was mobile. This had been immobilized with traction from a metal and plaster

head band to a bar in the mouth with an excellent cosmetic result and good dental approximation.

Dr W. S. Walker presented a patient forty-two years of age with severe cretinism, anemia, and abnormal uterine bleeding. He discussed the not uncommon association of hypothyroidism and abnormal uterine bleeding and also pointed out the danger of giving morphine to patients with myxedema or cretinism.

Dr George A. Buckley discussed several fracture cases, pointing out among other things that persistent pain may well be an indication of poor reduction. One patient was first seen several years ago with a fracture of both bones of one leg. He was treated in the usual conservative manner, the result was excellent but his convalescence very long. He came back six months ago with a similar fracture of the other leg and this time he was given early baking and massage, thereby halving his period of disability.

Drs C. D. McCann and B. Bornstein discussed the management of functional menorrhagia with endocrine products, pointing out the relationship of Prolan A and Prolan B to follicle ripening and corpus luteum development respectively and their relationship to the changes in the uterine mucosa during the menstrual cycle.

Dr F. F. Weiner demonstrated pyelograms of an unusual case of bilateral complete duplication of the ureters in a patient with a large dermoid cyst.

He also outlined the management of syphilis in the Brockton Hospital Clinic stressing (1) the importance of early diagnosis during the primary and secondary stages by darkfield examination, (2) the need of approximately two years of continuous treatment in early syphilis, (3) the necessity of routine lumbar puncture, and (4) continuance of treatment for an adequate length of time even in face of a negative serology.

FAULKNER HOSPITAL CLINICAL MEETING

The regular monthly clinical meeting of the Staff of the Faulkner Hospital was held at the hospital on Thursday, June 7, at 5 00 P.M.

Two of the cases which had come to autopsy during the month were presented for discussion.

One was a case of cardiac decompensation with a history of having had what might have been a coronary occlusion some years before. There had also been hypertension and a period of cardiac decompensation in the past. There was a positive Wassermann. There were murmurs suggesting involvement of the aortic valve and auricular fibrillation was also present. The point of clinical interest was what type of lesion would be found in the heart. The signs of involvement of the aortic valve with a positive Wassermann reaction in the blood made it seem likely that a heart worn out by working with the handicap of injury to the aortic valve due to syphilis would be found. On the other hand auricular fibrillation in such conditions is unlikely, and

also a heart which has once decompensated with such a lesion usually does not recover. In addition to the disturbance in the heart there had just before death developed a hemiplegia presumably due to an embolus from a mural thrombus and there was evidence of chronic nephritis of the vascular type. The autopsy showed that vascular disease of the arteriosclerotic type rather than syphilis had been the main factor in causing the cardiac decompensation. There was a mural thrombus in the left ventricle.

The other case was one in which evidence of pyloric obstruction existed with a history of hematemesis on two occasions during the ten months preceding death. The x-ray studies showed some type of lesion in the duodenum which was thought to be the scarring of an old ulcer. There was a dilated stomach and some spasm of the pylorus but not complete obstruction at the pylorus. The patient was losing weight and was somewhat anemic. The other physical finding of interest was a hard mass completely surrounding the rectum at its lowest point. This patient had been under observation earlier in the year and at that time this hard mass did not surround the bowel and seemed to be attached to one corner of the prostate. There was no retention of urine. On proctoscopic examination there was no evidence of ulceration of the mucous membrane of the bowel and an attempt to obtain a biopsy did not help because only normal mucous membrane was removed. Because the pyloric obstruction could not be established as due to malignant disease, exploration was advised and carried out. The patient did not survive the operation more than a few hours and the operation and partial postmortem examination showed a diffuse neoplasm presumably a lymphoblastoma involving the duodenum, other parts of the gastro-intestinal tract and invading the perirectal tissues. Had the patient survived it is possible that x-ray therapy might have been beneficial temporarily.

Dr. Edward L. Young, Jr., then talked about difficulties in the diagnosis of disease of the gallbladder and called attention to some of the peculiarities in the localization of the symptoms and emphasized in just what manner the x-ray studies and the Graham test should be used in reaching conclusions. He also called attention to the importance of seeing the patient during the attack in certain diseases of the gallbladder. He mentioned two cases in which the pain and discomfort were localized under the left costal border instead of the right. He cited cases in which the gallbladder according to the Graham test functioned normally but still at operation showed pronounced chronic inflammation in the wall and emphasized the fact that this test, after all, only shows the function of the gallbladder so far as receiving bile and discharging it again, and does not necessarily demonstrate disease of the gallbladder. He also called attention to the fact that there seems to be definite evidence that bile containing the dye and throwing a shadow may accumulate in the

duodenum giving an appearance suggesting a gall bladder and, after a fat meal may disappear from the duodenum giving the impression that there is a gallbladder functioning properly.

This meeting completes the series of meetings for the winter season of 1933-1934. The attendance and interest in these meetings have been such that the Staff feels that another series of meetings should be scheduled for the coming winter. Therefore, a schedule of the Faulkner Hospital Clinical Meetings for the winter season of 1934-1935 will be announced in September.

MEDICAL LIBRARY ASSOCIATION

The thirty-sixth annual meeting of the Medical Library Association was held in Baltimore, Md., May 21 to 24, inclusive, under the presidency of Miss Marcia C. Noyes, Librarian of the Medical and Chirurgical Faculty of the State of Maryland.

The next annual meeting will be held in Rochester, N. Y. in June, 1935.

The following officers were elected for 1934-35:

President: Mr. Charles Frankenberger, Librarian, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, Brooklyn, N. Y.

Vice President: Miss Louise Ophuls, Librarian, Lane Medical Library, San Francisco, Cal.

Secretary: Miss Frances N. A. Whitman, Librarian, Harvard University Schools of Medicine and Public Health, Boston, Mass.

Treasurer: Miss Mary Louise Marshall, Librarian, Tulane University Medical School, New Orleans, La.

Chairman, Executive Committee: Miss Marjorie J. Darrach, Librarian, Medical Science Department, Detroit Public Library, Detroit, Mich.

Editor of the 'Bulletin': Mr. J. C. Harding, Librarian, Cleveland Medical Library Association, Cleveland, Ohio.

Manager of Exchange: Miss Ella B. Lawrence, Librarian, Washington University School of Medicine, St. Louis, Mo.

INTERNATIONAL ASSOCIATION FOR PREVENTIVE PEDIATRICS

The Fourth Conference of the International Association of Preventive Pediatrics (medical section of the Save the Children International Union) will this year be held at Lyons, Thursday, and Friday, September 27-28.

The subjects to be discussed and the names of the rapporteurs are as follows:

(1) The Prophylaxis of Malaria in Children. Prof. Cacace, Naples, and Prof. Gillot, Algiers, with whom will be associated Dr. Larrony (a British rapporteur will be named later).

(2) The Prophylaxis of Rickets and Convulsions. Prof. Adam, Dantzig, and Prof. Monrad, Copenhagen.

Those who desire to be present at the Conference, as well as take part in the discussions following

the reports, are requested to communicate with the Secretary of the I A P P, 15 rue Lévrier, Geneva (Switzerland)

THE AMERICAN COLLEGE OF PHYSICIANS

The American College of Physicians will hold its Nineteenth Annual Clinical Session in Philadelphia, April 29 May 3, 1935

Announcement of these dates is made particularly with a view not only of apprising physicians generally of the meeting, but also to prevent conflicting dates with other societies that are now arranging their 1935 meetings

Jonathan C Meakins of Montreal, Que., is President of the American College of Physicians, and will arrange the Program of General Sessions. Dr Alfred Stengel, Vice-President in Charge of Medical Affairs of the University of Pennsylvania, has been appointed General Chairman of local arrangements, and will be in charge of the Program of Clinics. Mr E. R. Loveland, Executive Secretary, 133 135 South 36th Street, Philadelphia, Pa., is in charge of general and business arrangements, and may be addressed concerning any feature of the forthcoming Session

SOCIETY MEETINGS, CONGRESSES AND CONFERENCES

July 24-31—The IVth International Congress of Radiology will be held in Zurich under the presidency of Professor H. R. Schnitz. General Secretary Dr H. E. Walther, Gloriastrasse 14 Zurich

August 18 September 30—Medical Study Trip to Hungary. See page 975 issue of May 10

September 3-6—American Public Health Association at Pasadena, California. Dr J. D. Dunshie, Chairman Local Committee on Arrangements

September 4, 6, 6—International Union Against Tuberculosis. For information address the National Tuberculosis Association, 460 Seventh Avenue New York City

September 10, 11, 12, and 13—American Congress on Physical Therapy will meet in Philadelphia at the Bellevue Stratford. For details write American Congress of Physical Therapy, 30 North Michigan Avenue Chicago Illinois

September 10-15—First International Congress of Electro-Radiobiology will be held in the Doges Palace at Venice. For details address the General Secretary of the Congress Dr Giocondo Protti S. Gregorio 173 Venice (Italy)

September 27 and 28—International Association for Preventive Pediatrics. See page 1353

September 28-29—New England Surgical Society will meet at Burlington, Vermont. For details address the Secretary Dr John M. Birnle, 14 Chestnut Street Springfield, Mass

October 22 November 2—1934 Graduate Fortnight of the New York Academy of Medicine. See page 1240 issue of June 7

October 31 - November 2—Massachusetts State Nurses Association Hotel Statler, Boston. For information write Miss Helene G. Lee R.N. 420 Boylston Street Boston

April 29 May 3, 1935—The American College of Physicians. See notice above

June, 1935—Medical Library Association. See page 1353

BOOK REVIEWS

Human Embryology and Morphology. By Sir Arthur Keith. Fifth Edition. 558 pp. Baltimore: William Wood and Company. \$10.00

The fifth edition of this book the first of which appeared thirty-two years ago, takes cognizance not

only of the orthodox systematic and descriptive embryology, but also takes into consideration many of the newer advances made by the application of experimental methods to embryology. While adequate for the purposes of the student and the practitioner in description of embryological processes and of anatomic detail, nevertheless the book avoids an unwieldy size. A note from the authors' preface might well register with more of our scientific writers. It says "There is one danger to which successful textbooks are particularly exposed in these times. It is the danger of overgrowth. Dominant stocks of animals have been hurried to extinction in past geological ages because their bodies became so big as to be unwieldy. I have seen most valuable and prosperous textbooks killed by overgrowth."

This clearly written volume is adequately illustrated by a number of well-chosen diagrams. In the discussion of the development of various parts of the body, adequate attention is placed on points of clinical significance, such as malformation. This book may well be considered a distinct addition to any physician's library.

Text Book of Pathology. By Robert Muir. Third Edition. 957 pp. Baltimore: William Wood and Company. \$10.00

This textbook is one of the standard English works on pathology and has many commendable features. However, it finds stiff competition from the best of the American textbooks and particularly is at a disadvantage as compared with the excellent text of Boyd of Winnipeg. The small yet adequate size of the illustrations is a feature that should do much to reduce the cost of the book and might well be followed by some of our own writers.

Adequate emphasis is laid on gross pathology without neglecting histologic detail.

With the treatment of some subjects the reviewer is not in sympathy, as for example arteriosclerosis. Here Muir sharply divides the atheromatous type from other types of arteriosclerosis, excluding it from the classification of arteriosclerosis. The statement that calcification of the media is a frequent occurrence in the abdominal aorta is certainly not in keeping with experience here. The division of arteriosclerosis into that secondary to nephritis and primary arteriosclerosis is unusual.

The discussion of Paget's disease of bone and osteitis fibrosa cystica is rather disappointing. The section on bone tumors is also a bit inadequate.

The style is very pleasant, clear and readable, and no doubt contributes to the intrinsic worth that has led this textbook to its third edition.

The index leaves much to be desired. Thus, the only mention of carbon monoxide in the index leads one to the statement that "Lorrain Smith found by means of the carbon monoxide method that the blood volume in cases of chlorosis was greatly increased."

The New England Journal of Medicine

VOLUME 210

JUNE 28, 1934

NUMBER 26

The Massachusetts Medical Society

ANNUAL MEETING OF THE COUNCIL

THE annual meeting of the Council was held at Worcester in the Ballroom of the Hotel Bancroft on Tuesday, June 5 1934, at 12 o'clock noon. The President, Dr William H Robey Suffolk, was in the chair and the following 156 Councilors present

BARNSTABLE

W D Kinney

BERKSHIRE

W P Kelly
H J Downey
W T Frawley

BRISTOL NORTH

W H Allen
A R Crandell
B M Latham

BRISTOL SOUTH

R B Butler
J A Barre
G W Blood
E F Cody
E D Gardner

ESSEX NORTH

E S Bagnall
R V Baketel
J F Burnham
T R Healy
E P Laskev
F W Snow
L T Stokes
W D Walker

ESSEX SOUTH

C L Hoitt
N P Breed
J F Donaldson
O S Pettingill

FRANKLIN

H M Kemp
H G Stetson
A H Wright

HAMPDEN

F H Allen
E P Bagg Jr
J M Birnie
W A R Chapin
G D Henderson
M W Harrington
M B Hodskins
E A Knowlton
J Z Nanrlson
M W Pearson
A G Rice
G L Schadt
H L Smith
G L Steele

HAMPSHIRE

A J Bonneville
J G Hanson

MIDDLESEX EAST

J H Fay
J H Blaisdell
Richard Dutton
E M Halligan
K L MacLachan
R R Stratton
E E Tyzzer

MIDDLESEX NORTH

M L Alling
A R Gardner
T A Stamas

MIDDLESEX SOUTH

A H Blake
E W Barron
E H Bigelow
G F H Bowers
W H Crosby
D F Cummings
D C Dow
A W Dudley
H Q Gallupe
W G Grandison
N M Hunter
C M Hutchinson
A A Levi
C E Mongan
Dwight O Hara
C T Porter
S H Remick
F G Smith
H P Stevens
Fresenius Van Nüys

NORFOLK

Cadis Phipps
F G Balch
H G Batchelder
A S Begg
D N Blakely
W L Burrage
D G Eldridge
I A Finkelstein
J B Hall
L F Johnson
G W Kaan
W A Lane
J S H Leard
Charles Malone

NORFOLK (Cont.)

F P McCarthy
L T McCready
Hyman Morrison
T J Murphv
Benjamin Parvey
Victor Safford
H F R Watts

NORFOLK SOUTH

C S Adams
W G Curtis
G V Higgins
F E Jones
N R Pillsbury
C A Sullivan

PLYMOUTH

P H Leavitt
T H McCarthy
J J McNamara
G A Moore

SUFFOLK

J W Bartol
G H Bigelow
Horace Binney
C S Butler
R C Cochrane
F J Cotton
W P Cross
Lincoln Davis
Reginald Fitz
Channing Frothingham
H W Goodall
H T Hinchins
E P Joslin
R I Lee
G B Magrath
J H Means
T J O'Brien

SUFFOLK (Cont.)

W S Parker
G P Reynolds
W H Robey
Louisa Paine Tingley
H P Towle
Shields Warren

WORCESTER

J C Anstin
W P Bowers
L R Bragg
F H Clapp
P H Cook
W J Delahanty
G A Dix
G E Emery
M F Fallon
Homer Gage
J J Goodwin
David Harrower
E L Hunt
E R Leib
A W Marsh
C Miller
J W O Connor
W C Seelye
E H Trowbridge
F H Washburn
R P Watkins
S B Woodward

WORCESTER NORTH

C B Gay
F R Dame
T R Donovan
A F Lowell
F M McMurray
H R Nye
W F Sawyer

The record of the last meeting was read in abstract by the Secretary, and as no omissions or corrections were noted it was accepted as read and as published in the "Proceedings" in the official organ of the Society. The President read obituaries of three Councilors who had died recently as follows

Since the last meeting of the Council death has taken from us three of our members

DR. THOMAS HENRY O TOOLE died at his home in Norwood on April 4 1934 at the age of sixty two. He was born in Clinton Massachusetts, but moved to Philadelphia Pennsylvania, where he received his early education later being graduated from Johns Hopkins University and Jefferson Medical College of Philadelphia in 1897. He settled in Norwood where he practiced for thirty five years.

Dr O Toole joined the Massachusetts Medical Society in 1922 and was a member of the Council at

the reports, are requested to communicate with the Secretary of the I A P P, 15 rue Lévrier, Geneva (Switzerland)

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6 That Dr Charles William Jackson of Monson a retired Fellow be nominated to the House of Delegates for Affiliate Fellowship in the American Medical Association

DAVID N BLAKELY *Chairman*

He then offered his committee's report on Finance and it was adopted

REPORT OF THE COMMITTEE ON MEMBERSHIP AND
FINANCE ON FINANCE

This Committee recommends that the surety bond of the Treasurer for \$15 000 which expires June 19 1934 be renewed for one year from that date

DAVID N BLAKELY *Chairman*

Reports on three petitions for restoration to the privileges of fellowship were read by the Secretary as follows for E J Grainger, F S Bennett and W B Riley Each recommended that the petitioner be restored under the usual conditions and each was accepted by vote The report of a committee composed of Richard Collins, H Q Gallupe, and F Van Nûrs, recommending that the petition of I F Armstrong of Hudson be restored, had been referred to the Standing Committee on Ethics and Discipline by the Council February 7, 1934 for an opinion That committee, at a meeting on February 20, 1934, had reported that the report of the committee headed by Dr Richard Collins in the case of I F Armstrong be approved On being put to a vote Dr Armstrong was restored under the customary conditions

Petitions for restoration were received and committees to consider them appointed as follows

For P R Oeser

J F Burnham J F Howard W C Farley

For P J O Day

R. A. Rice F H Thompson Jr., T R Donovan

For H S Queen

G E Emery E R Leib R J Ward

For G L Lemaitre

E E Cyr, N J Scarito E H Ganley

The Treasurer presented the following report, and it was accepted by vote

REPORT OF THE TREASURER

Regarding the finances of the Society for the first five months of this year that is from January 1 to June 2 1934 the treasurer reports as follows

Annual dues resident and nonresident, received by the treasurer total \$38 736 This is an increase of more than \$3900 over the corresponding five months of 1933 the period you will recall of the "banking holiday" with bank failures Income from securities of General Fund is \$1743 which is a small increase over the corresponding months of 1933 Income from Building Fund is \$934 compared with \$947 for the five months of 1933 You may recall also that defaults came in 1933 in interest of two securities held in the Building Fund

The Committee on Postgraduate Medical Instruction began the year with a cash balance of \$2750

and the Council voted an additional appropriation of \$1000 for expenses This Committee ends the period to this June with a cash balance of about \$3200 available for 1934 1935 activities

In general our Securities (bonds and notes) have shown further appreciation in market values during this year indeed on several issues prices are now abnormally high During the first five months of this fiscal year when surplus cash accumulated from assessments the treasurer in order to bring in some income for the Society has bought a number of short term securities yielding from 1¼ to 3½ per cent He has also bought additional United States Government notes and other bonds for longer investment In his opinion it is becoming more difficult to invest wisely our funds owing to uncertainties in the outlook for securities

There has been only one unusual expense not large due to the coöperation of our Society with the Civil Works Administration of Massachusetts and the Federal Emergency Relief Administration

CHARLES S BUTLER, *Treasurer*

Dr A S Begg, Norfolk a member of the Committee to revise the By-Laws spoke as follows

Mr. President and Gentlemen as you will remember the Committee to revise the By-Laws was appointed at the October meeting of the Council It held a series of meetings and presented at the February meeting a report At that February meeting there were a number of suggestions made although the Committee had attempted to get suggestions in before the meeting, those were rather slow in coming and finally the Council at the February meeting voted to refer this report back to the Committee This was done, and following the February meeting Dr Cheever, chairman had a letter in the *New England Journal of Medicine* asking for suggestions He also wrote to the presidents and secretaries of the various District Societies asking for suggestions and we had our final meeting at the very last possible moment so that we could get the report out for this particular meeting to-day

We have received a number of suggestions which we have carefully considered, and some of these have been included in this new draft, and some of them for various reasons were not included This report which we now present contains two typographical errors that have been called to our attention One of these is simply in the spelling of a word—on page 6 In the word "governed" The "e" and "n" should be interchanged And in Section 7 on page 5 the word "blanks" appears in two places and this should be changed to read "forms"—"printed forms" instead of "printed blanks" Those two corrections have been made in the By-Laws as they are now submitted

A COUNCILOR There is one additional typographical error on page 6 Section 1 where it says "The Council shall consist" The second "s" is left out of "consist"

the time of his death. He was a Fellow of the American Medical Association.

He is survived by his widow, a daughter and a son, Dr Thomas Henry O Toole, who is a Fellow of the Massachusetts Medical Society

DR. STEPHEN ANDREW MAHONEY SR died at his home in Holyoke on March 30, 1934, of a heart attack. He was born in North Brookfield in 1863. His pre-medical education was acquired at Holy Cross College where he was given the degree of Bachelor of Arts in 1885. His medical degree was conferred by the Harvard Medical School in 1889.

He began practice in Holyoke and in 1892 was appointed City Physician and a member of the Board of Health Survey serving until 1894. After a few years of general practice he devoted his major interest to surgery and in later years restricted his work to this specialty. Dr Mahoney was surgeon on the staffs of the Holyoke City and Providence Hospitals and was also Chief of Staff of the Memorial Clinic in Holyoke.

Dr Mahoney joined the Massachusetts Medical Society in 1888 was a member of the Council for many years taking an active part in the debates at meetings. He was also a member of the New England Surgical Society and a Fellow of the American Medical Association.

He is survived by his widow, two sons, one daughter and a sister. One son, Dr Stephen A Mahoney, is a Fellow of the Massachusetts Medical Society.

DR WILLIAM HOWARD ENSWORTH died at his home in East Boston May 3, 1934. He was born in East Boston, October 13, 1865. His early education was acquired in the schools of East Boston, he was graduated in medicine from the Harvard Medical School in 1888 and joined the Massachusetts Medical Society in that year. He was a member of the Council at the time of his death and a Fellow of the American Medical Association. At the meetings of the Council he took part in the debates and always showed an active interest in the proceedings.

Dr Ensworth is survived by a sister and a nephew.

The Secretary read the names of the Nominating Committee by Districts and the following responded to their names and retired to make a list of nominations:

Barnstable W D Kinney, *Berkshire* H J Downey, *Bristol North* W H Allen, *Bristol South* E F Cody, *Essex North* J F Burnham, *Hampden* G L Schadt, *Hampshire* J G Hanson, *Middlesex East* R R Stratton, *Middlesex South* A W Dudley, *Norfolk* T J Murphy, *Norfolk South* C S Adams, *Plymouth* T H McCarthy, *Suffolk* Lincoln Davis, *Worcester* David Harrower, *Worcester North* H R Nye.

Dr D N Blakely, Norfolk, presented the report of the Committee on Membership and Finance, on Membership, as follows and it was adopted.

Human Embryology and Morphology MEMBERSHIP AND
Keith Fifth Edition 558 pp
Ham Wood and Company \$10 00

The fifth edition of this book the ^{SEVENTEEN} Fellows be
appeared thirty two years ago, takes as of Chapter I,

- 1 Baker Harry Beecher, Taunton with remission of dues 1932, 1933, 1934
- 2 Bruce, Daniel Angus Atlantic (Quincy) with remission of dues 1934
- 3 Colby, Fred Bennett, Rangeley, Maine, with remission of dues 1933 1934
- 4 Dewey, Charles, Gipson, Dorchester
- 5 Dion Thomas Joseph Quincy, with remission of dues, 1934
- 6 Duckering William West, Dorchester
- 7 Granger Karle Henry, South Weymouth, with remission of dues 1934
- 8 Jackson, Alton Atwell, Everett.
- 9 Martin George Forrest, Lowell
- 10 Pillsbury, Ernest Dean Sunmount N Y with remission of dues, 1934
- 11 Robinson William Henry, Jamaica Plain, with remission of dues, 1934
- 12 White, William Allen, Roxbury
- 13 Whiting George Washington Whitney, Medford with remission of dues, 1934
- 14 Wilson, Charles Oscar, Lowell with remission of dues 1934

2 That dues of the following named two Fellows be remitted under the provisions of Chapter I, Section 6, of the By Laws

- 1 Brindisi Rocco Boston 1934
- 2 Hoey Warren Henry, Newton Upper Falls, 1934

3 That the following named seven Fellows be allowed to resign, under the provisions of Chapter I, Section 7, of the By Laws

- 1 Cosgrove, Joseph Justin Atlantic, Maine, with remission of dues, 1933 1934
- 2 Ghormley, Ralph Kalb Rochester, Minn with remission of dues 1933 1934
- 3 Jordan, William Riley, Richmond, Va, with remission of dues, 1933, 1934
- 4 Komisar, Paul Stanislaw Erie Pa, with remission of dues, 1931 1932, 1933, 1934
- 6 McKeough, Wilfred Aloysius, Jamaica Plain, with remission of dues 1934
- 6 McQuade, Lewis Steele, Wollaston, with remission of dues, 1932, 1933, 1934
- 7 Saeger, Ernest Tirrill, Boston, with remission of dues, 1932, 1933, 1934

4 That the following named six Fellows be deprived of the privileges of Fellowship under the provisions of Chapter I Section 8, Clause (a) of the By Laws

- 1 Boyd James Van Wagner Springfield
- 2 Judkins, Charles Louville Mason, Lynn
- 3 LeBeau Raoul Joseph Attleborough
- 4 McMahon William Thomas Pittsfield.
- 5 Rosenthal, Joseph Roxbury
- 6 Smith, Forster Hanson, Lowell

5 That the following named five Fellows be allowed to change their membership from one District Society to another without change of legal residence, under the provisions of Chapter III Section 3, of the By Laws

One from Essex North to Essex South

- 1 Maddock Stephen James, Boxford

One from Essex North to Suffolk

- 1 McFee William David Haverhill

One from Middlesex South to Suffolk

- 1 Richardson Wyman Newton Center

One from Norfolk to Plymouth

- 1 Parker, George Leonard Wrentham

One from Worcester to Worcester North

- *1 Bassow, George Joseph Athol

*Transferred to Worcester June 5 1923

6 That Dr Charles William Jackson of Monson a retired Fellow be nominated to the House of Delegates for Affiliate Fellowship in the American Medical Association

DAVID N. BLAKELY *Chairman*

He then offered his committee's report on Finance and it was adopted

REPORT OF THE COMMITTEE ON MEMBERSHIP AND FINANCE ON FINANCE

This Committee recommends that the surety bond of the Treasurer for \$15 000 which expires June 19 1934, be renewed for one year from that date

DAVID N. BLAKELY *Chairman*

Reports on three petitions for restoration to the privileges of fellowship were read by the Secretary as follows for E. J. Grainger, F. S. Bennett and W. B. Riley. Each recommended that the petitioner be restored under the usual conditions, and each was accepted by vote. The report of a committee composed of Richard Collins, H. Q. Gallupe, and F. Van Nuys, recommending that the petition of I. F. Armstrong of Hudson be restored, had been referred to the Standing Committee on Ethics and Discipline by the Council, February 7, 1934 for an opinion. That committee, at a meeting on February 20, 1934, had reported that the report of the committee headed by Dr. Richard Collins in the case of I. F. Armstrong be approved. On being put to a vote Dr. Armstrong was restored under the customary conditions.

Petitions for restoration were received and committees to consider them appointed as follows

For P. R. Oeser

J. F. Burnham J. F. Howard W. C. Farley

For P. J. O'Day

R. A. Rice F. H. Thompson Jr., T. R. Donovan

For H. S. Queen

G. E. Emery E. R. Leib R. J. Ward

For G. L. Lemaître

E. E. Cyr, N. J. Scarito E. H. Ganley

The Treasurer presented the following report, and it was accepted by vote

REPORT OF THE TREASURER

Regarding the finances of the Society, for the first five months of this year that is from January 1 to June 2 1934 the treasurer reports as follows

Annual dues resident and non resident received by the treasurer total \$38 736. This is an increase of more than \$3900 over the corresponding five months of 1933 the period you will recall of the banking holiday with bank failures. Income from securities of General Fund is \$1743 which is a small increase over the corresponding months of 1933. Income from Building Fund is \$934 compared with \$947 for the five months of 1933. You may recall also that defaults came in 1933 in interest of two securities held in the Building Fund.

The Committee on Postgraduate Medical Instruction began the year with a cash balance of \$2750

and the Council voted an additional appropriation of \$1000 for expenses. This Committee ends the period to this June with a cash balance of about \$3200 available for 1934-1935 activities.

In general our Securities (bonds and notes) have shown further appreciation in market values during this year. Indeed on several issues, prices are now abnormally high. During the first five months of this fiscal year when surplus cash accumulated from assessments the treasurer in order to bring in some income for the Society has bought a number of short term securities yielding from 1½ to 3½ per cent. He has also bought additional United States Government notes and other bonds for longer investment. In his opinion it is becoming more difficult to invest wisely our funds owing to uncertainties in the outlook for securities.

There has been only one unusual expense, not large due to the cooperation of our Society with the Civil Works Administration of Massachusetts and the Federal Emergency Relief Administration.

CHARLES S. BUTLER, *Treasurer*

Dr. A. S. Begg, Norfolk, a member of the Committee to revise the By-Laws spoke as follows

Mr. President and Gentlemen, as you will remember, the Committee to revise the By-Laws was appointed at the October meeting of the Council. It held a series of meetings and presented at the February meeting a report. At that February meeting there were a number of suggestions made, although the Committee had attempted to get suggestions in before the meeting, those were rather slow in coming, and finally the Council at the February meeting voted to refer this report back to the Committee. This was done, and following the February meeting, Dr. Cheever, chairman, had a letter in the *New England Journal of Medicine* asking for suggestions. He also wrote to the presidents and secretaries of the various District Societies, asking for suggestions, and we had our final meeting at the very last possible moment so that we could get the report out for this particular meeting to-day.

We have received a number of suggestions, which we have carefully considered, and some of these have been included in this new draft, and some of them for various reasons were not included. This report which we now present contains two typographical errors that have been called to our attention. One of these is simply in the spelling of a word—on page 6. In the word "governed" the "e" and "n" should be interchanged. And in Section 7 on page 5 the word "blanks" appears in two places, and this should be changed to read "forms"—"printed forms" instead of "printed blanks". Those two corrections have been made in the By-Laws as they are now submitted.

A COUNCILOR. There is one additional typographical error on page 6 Section 1 where it says, "The Council shall consist". The second "s" is left out of "consist".

the time of his death. He was a Fellow of the American Medical Association.

He is survived by his widow, a daughter and a son, Dr. Thomas Henry O'Toole, who is a Fellow of the Massachusetts Medical Society.

DR. STEPHEN ANDREW MAHONEY SR. died at his home in Holyoke on March 30, 1934, of a heart attack. He was born in North Brookfield in 1863. His pre-medical education was acquired at Holy Cross College where he was given the degree of Bachelor of Arts in 1885. His medical degree was conferred by the Harvard Medical School in 1889.

He began practice in Holyoke and in 1892 was appointed City Physician and a member of the Board of Health Survey, serving until 1894. After a few years of general practice he devoted his major interest to surgery and in later years restricted his work to this specialty. Dr. Mahoney was surgeon on the staffs of the Holyoke City and Providence Hospitals and was also Chief of Staff of the Memorial Clinic in Holyoke.

Dr. Mahoney joined the Massachusetts Medical Society in 1888, was a member of the Council for many years taking an active part in the debates at meetings. He was also a member of the New England Surgical Society and a Fellow of the American Medical Association.

He is survived by his widow, two sons, one daughter and a sister. One son, Dr. Stephen A. Mahoney, is a Fellow of the Massachusetts Medical Society.

DR. WILLIAM HOWARD ENSWORTH died at his home in East Boston May 3, 1934. He was born in East Boston, October 13, 1865. His early education was acquired in the schools of East Boston. He was graduated in medicine from the Harvard Medical School in 1888 and joined the Massachusetts Medical Society in that year. He was a member of the Council at the time of his death and a Fellow of the American Medical Association. At the meetings of the Council he took part in the debates and always showed an active interest in the proceedings.

Dr. Ensworth is survived by a sister and a nephew.

The Secretary read the names of the Nominating Committee by Districts and the following responded to their names and retired to make a list of nominations:

Barnstable W D Kinney, *Berkshire* H J Downey, *Bristol North* W H Allen, *Bristol South* E F Cody, *Essex North* J F Burnham, *Hampden* G L Schadt, *Hampshire* J G Hanson, *Middlesex East* R R Stratton, *Middlesex South* A W Dudley, *Norfolk* T J Murphy, *Norfolk South* C S Adams, *Plymouth* T H McCarthy, *Suffolk* Lincoln Davis, *Worcester* David Harrower, *Worcester North* H R Nye.

Dr. D N Blakely, Norfolk, presented the report of the Committee on Membership and Finance on Membership, as follows and it was adopted: Its recommendations adopted.

Human Embryology and Morphology MEMBERSHIP AND
Keith Fifth Edition 558 pp SHIP
Ham Wood and Company \$10.00

The fifth edition of this book, the ^{teen} Fellows be
appeared thirty two years ago, takes ^{as} of Chapter I,

- 1 Baker, Harry Beecher, Taunton, with remission of dues, 1932 1933, 1934
- 2 Bruce, Daniel Angus Atlantic (Quincy) with remission of dues 1934
- 3 Colby, Fred Bennett, Rangeley Maine, with remission of dues, 1933, 1934
- 4 Dewey, Charles Gilson, Dorchester
- 5 Dion, Thomas Joseph, Quincy, with remission of dues, 1934
- 6 Duckering, William West Dorchester
- 7 Granger, Karle Henry, South Weymouth with remission of dues, 1934
- 8 Jackson, Alton Atwell, Everett
- 9 Martin, George Forrest, Lowell
- 10 Pillsbury, Ernest Dean, Sunmount N Y, with remission of dues, 1934
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- 1 Maddock, Stephen James Buxford

One from Essex North to Suffolk

- 1 McFee William David Haverhill

One from Middlesex South to Suffolk

- 1 Richardson, Wyman Newton Center

One from Norfolk to Plymouth

- 1 Parker George Leonard Wrentham

One from Worcester to Worcester North

- *1 Bassow, George Joseph Athol

Transferred to Worcester June 5 1934

consist of members in each of the eighteen districts. He thought that to get together nineteen men and try to accomplish anything would not be feasible, and he thought that the present Committee on State and National Legislation was not necessarily concentrated about Boston. Certainly it had one member from Worcester.

Dr J W Bartol, Suffolk, spoke of his experience on three different committees to revise the By-Laws, the last one reporting in this very room six years ago to a day, when the By-Laws of 1928 were approved by the Council. The present committee to revise the By-Laws began its work last October, and brought in a careful revision. Many suggestions were given at the meeting last February. All Fellows had been urged to make suggestions, both by a letter in the *Journal* and by correspondence with the officers of the Society and of the District Societies. He thought that the By-Laws as presented by the Committee, with any minor changes that might be presented, ought to be approved by the Council at once, that if there were any amendments later, they could be taken care of in the customary manner by the provisions of Chapter IX of the By-Laws.

Dr C E Mongan, Middlesex South, offered an amendment as follows. On page 5 in Section 5, beginning "Councilors in number equal to one for every thirty active and retired fellows and a majority fraction thereof, as of January first," he would like to amend that by substituting the word "twenty" for "thirty."

Dr T H McCarthy, Plymouth, said that the Plymouth District had instructed him to move to modify the representation of Councilors from one in thirty to one in twenty-five, but he did not care to amend Doctor Mongan's motion. The amendment was seconded and put to a vote and passed. Doctor Watts' amendment was put to a voice vote and not accepted. On a rising vote it was plain that the noes prevailed by a sizable majority.

Dr J F Burnham, Essex North, spoke as follows:

Chapter VI, Section 3, the sixth paragraph of the amended By-Laws reads as follows:

"Under the direction of the Committee on Publications he (the secretary) shall issue annually, as soon as possible after the first of January, to the officers of the general Society, of the District Societies, to the Councilors, and to such other Fellows in good standing as make application at the headquarters of the Society, a directory of the officers and Fellows of the Society."

That supersedes the words "sent to the Fellows who are not in arrears." That, as you see, limits the distribution of our directory very, very much, and I think it is an error. I think the men in the trenches should be recognized

For many years we have had a directory which is the best directory of any published by any State Society in the United States and is a wonderful credit to our Secretary. [Applause] It should be in the hands of every man who pays his dues.

Some of the reasons are: First, it will help a man who sends a case to another town to be able to send it to a Fellow of the Society. If a man wishes to call a consultant, he can call a consultant from that list with more certainty than he can call from a list that contains every doctor who may be in Massachusetts. It is a splendid advertisement of our Society.

We know there is some complaint among the men in the trenches that the Society is not doing much for them. We who are on the inside all know that that is not the fact. But here is one definite evidence that can be brought up that the Society has struck away one of the privileges which it has given to the practitioners throughout the State ever since the directory was published.

Doctor Begg stated that his committee had received the suggestions about the Directory and that they did not wish to see it abandoned, but were trying to save money for the Society by restricting the distribution. Doctor Burnham's motion having been seconded was passed by a unanimous vote.

The By-Laws as thus amended were approved without dissent.

The Nominating Committee having placed the following names on the blackboard and there being no further nominations from the floor, on motion duly seconded, the Councilors were requested not to vote and the Secretary to cast one ballot for the names on the blackboard:

For President William H Robey, Boston
For Vice-President Philemon E Truesdale, Fall River
For Secretary Walter L Burrage, Brookline
For Treasurer Charles S Butler, Boston
For Orator Brace W Paddock, Pittsfield

The Secretary having cast the ballot, the President announced the above officers and orator elected.

The Council adjourned for the Cotting Luncheon at 1:10 P.M.

The Council reassembled in the same room at 2:00 P.M., President Robey in the chair. Dr R I Lee, Suffolk, Chairman of the Committee on Publications, presented an informal report, saying that the *Journal* was in excellent condition financially and also in the scientific and literary material in hand. It was well known that the credit for its successful conduct was due to the editorial staff and to the Board of Editorial Advisors, but particular credit should be given to the Editor-in-Chief, who has served so many years with a reduced salary.

DR BEGG Oh, yes'

The Committee feels that, although since our final meeting there have been some suggestions made regarding changes in the By-Laws, it is impossible at a meeting of this kind to give proper consideration to some of those suggestions, and the Committee feels that it should ask that this report be adopted and these By-Laws be approved, and then if there are further changes they can be brought about through the provisions for amendments under Chapter IX, and I so move you

Dr H F R Watts, Norfolk, spoke as follows

Mr President, I am instructed by the Councilors of the Norfolk District to bring to your attention one or two phases concerning the Committee on State and National Legislation. That Committee, as everyone recognizes, has done very valiant service. It has done tremendous service under very great difficulties in that the members have done it pretty much alone. As you know, in the past it has been the great complaint, and justly so, of the Committee on State and National Legislation that when hearings occurred at the State House they could get no one to come from the Society at large to help them in those hearings. That has been a crying shame.

During the past year the Norfolk District Medical Society has established a local Committee on State and National Legislation, whose aim it has been to aid and abet the efforts of the standing Committee on State and National Legislation, and I believe not without some material help. The Council of the Norfolk District feels that better work could be done if a larger number of Fellows of the Society could be given a job in this matter and in other matters. It feels also, incidentally, that if a larger number of men are Councilors than one in thirty, there would be a greater interest in the work of the Society. More men could be put to work and given a job.

This Committee on Legislation of the Norfolk District is so organized that the day before a State House hearing, for instance, by a system of "tom-tom" spreading of information on the telephone and distribution of the work among the Fellows, a large number of the Fellows were instructed to get down to the State House the following morning at 10 o'clock, and that has been done in many instances, with some help, I believe. Therefore, the Norfolk District would like, in the interest of decentralization of the work, that this standing committee be enlarged to include one member from every District Society in the State, making 19 members—a large committee, to be sure.

The second paragraph in Section 6 of the

By-Laws, as existing and as now presented, seems to be a bit in conflict with that idea and with the endeavors of the Norfolk Committee. It says

"Any committees on state and national legislation appointed by District Societies shall be auxiliary to and under the control of this committee."

Any committee appointed by a District Medical Society must be responsible to its District Medical Society primarily, it cannot be under the control of the standing committee of the State Society. Therefore, Mr President, I am prepared, by instruction from my colleagues in the Norfolk District, to offer this change which, if the Council cannot adopt at the present time, may take perhaps the regular course of either coming up later as an amendment, as suggested, or it might very well, it seems to me, be incorporated right now in Section 6.

"The Committee on State and National Legislation shall consist of nineteen fellows, being one fellow to each District Society, together with the President, who shall be ex-officio its chairman. It shall uphold such measures" and so on.

The rest of it can stand exactly as it is now. And in lieu of the second paragraph in which it is now prescribed that committees of local District Societies shall be under the control of the standing committee, at the suggestion of my colleagues I have drafted this paragraph.

It shall encourage and foster the functioning of committees on legislative matters in each of the District Societies, to the end that District Society committees advise the Standing Committee on local conditions and requirements, that they cooperate in every way with the aims and purposes of, and through, the Standing Committee, but that they be, primarily, responsible to their local District Societies.

And the rest of the section is to remain as it is.

Dr T J O'Brien, Suffolk, a member of the Standing Committee on State and National Legislation, made an informal report of the activities of that committee, explaining what had been done by the auxiliary committees during recent time. Dr F P McCarthy, Norfolk, seconded Doctor Watts' motion. He thought that the Legislative Committee was concentrated around the City of Boston, and that it would be desirable to enlarge this committee, that the power of this committee should be spread throughout the State. Dr S B Woodward, Worcester, said that as stated by Doctor O'Brien, he had been responsible while president for the appointment of the auxiliary committees which

consist of members in each of the eighteen districts. He thought that to get together nineteen men and try to accomplish anything would not be feasible, and he thought that the present Committee on State and National Legislation was not necessarily concentrated about Boston. Certainly it had one member from Worcester.

Dr J W Bartol, Suffolk, spoke of his experience on three different committees to revise the By-Laws, the last one reporting in this very room six years ago to a day, when the By-Laws of 1928 were approved by the Council. The present committee to revise the By-Laws began its work last October, and brought in a careful revision. Many suggestions were given at the meeting last February. All Fellows had been urged to make suggestions, both by a letter in the *Journal* and by correspondence with the officers of the Society and of the District Societies. He thought that the By-Laws as presented by the Committee, with any minor changes that might be presented, ought to be approved by the Council at once, that if there were any amendments later, they could be taken care of in the customary manner by the provisions of Chapter IX of the By-Laws.

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The By-Laws as thus amended were approved without dissent.

The Nominating Committee having placed the following names on the blackboard and there being no further nominations from the floor, on motion duly seconded, the Councilors were requested not to vote and the Secretary to cast one ballot for the names on the blackboard:

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For Secretary Walter L Burrage Brookline
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The Secretary having cast the ballot, the President announced the above officers and orator elected.

The Council adjourned for the Cotting Luncheon at 1 10 P M.

The Council reassembled in the same room at 2 00 P M, President Robey in the chair. Dr R I Lee, Suffolk, Chairman of the Committee on Publications, presented an informal report, saying that the *Journal* was in excellent condition financially and also in the scientific and literary material in hand. It was well known that the credit for its successful conduct was due to the editorial staff and to the Board of Editorial Advisors, but particular credit should be given to the Editor-in-Chief, who has served so many years with a reduced salary.

In the absence of the Chairman, the Report of the Committee on Ethics and Discipline was read in abstract by the Secretary (See Appendix No 1) The report was accepted

Dr Reginald Fitz, Suffolk, read the Report of the Committee on Medical Education and Medical Diplomas (See Appendix No 2) The report was accepted and its recommendations adopted, including a new list of medical schools and colleges, diplomas from which are recognized by the Council, and a prize of \$50 for the best written case report by an interne

Dr Dwight O'Hara, Middlesex South, presented two reports for the Committee on Public Health (See Appendix No 3) The reports were accepted Dr T J O'Brien, Suffolk, read the report of the Committee on State and National Legislation, and it was accepted (See Appendix No 4) Dr E D Gardner, Bristol South, read the report of the Committee on Malpractice Defence and it was accepted (See Appendix No 5) Dr T J O'Brien, Suffolk, read the report of the Committee on Permanent Home, and it was accepted (See Appendix No 6) Dr W P Bowers, Worcester, stated as regards the New England Medical Council, that the New Hampshire and Rhode Island members a year ago had been disinclined to become associated with the other State Societies in meeting an equal proportion of the assessment for maintaining the work At the last meeting of the New Hampshire Medical Society there was exhibited a definite desire to have this organization kept alive, but it has seemed advisable, until there should be a more definite unanimity of opinion with reference to the functions of that Council, that the operation should be suspended until that spirit is manifested

Dr F R Ober read the report of the Committee on Postgraduate Medical Instruction It was accepted with the thanks of the Council and a vote that the Committee be continued (See Appendix No 7)

The President asked the Vice President, Doctor Truesdale, to take the Chair Dr Robey took the floor and explained the report of the Committee on Public Relations as follows

Mr Chairman, the Committee on Public Relations is now in its third year The large committee has held three meetings during the past year and the sub committee several more The small committee has had as its chairman Dr Walter A Lane The attendance at the meetings has been very large, I should say practically 100 per cent, and the men have come from all parts of the State for each meeting of our Committee

The work of the Committee has been wide in scope in the number of topics that have been considered Unfortunately, the results are small, but that is not the fault of the Committee

but simply because it has met with insuperable difficulties in the matters which it has had to handle Probably no Committee in the Society has had so difficult a piece of work to perform as has this Committee on Public Relations

I simply want to call to your attention, gentlemen, one or two points in this printed report which is in your hands First, Question 3 on page 4 (See Appendix No 8) I am just going to read that so it will be in your minds This has to do with industrial accident insurance I may say, as a preface to this, that we have had another conference this year with representatives of the claim agents and insurance companies, and, while I think they enjoy meeting with us, they are really in the same position we are Their acts are fixed by law, as are ours, but there are certain things which the Committee can do And this third question on page 4 is

"Is your staff in favor of recommending to the trustees of your hospital that any injured patient, coming under the provisions of the Workmen's Compensation Act, shall be received on a private or semi-private base charge, shall be allowed to choose from the staff a physician who shall be responsible for his treatment and care, and who shall be eligible to make reasonable charges for his services?"

There is no need of reading the list of the hospitals in the questionnaire which was sent out to a large number of them As a result of this, the Committee on Public Relations has recommended as follows (Page 4, bottom)

"We recommend that all patients who come under the provision of the Workmen's Industrial Compensation Act on admission to a hospital be referred to private or semi-private rooms and that the patient be required to choose a physician who will be responsible for his care and treatment The Secretary of the Massachusetts Medical Society shall inform by letter the trustees and staff of each hospital, admitting Industrial Accident cases to its facilities, of the action of the Council of the Massachusetts Medical Society"

DR WOODWARD I suggest substituting the word "asked" for the word "required"

PRESIDENT ROBEY Yes, substituting "asked" for "required" That was the particular advice, I think, of the Attorney-General

The next few pages have to deal with the bill introduced by the State Board of Public Health to establish a board for the examination of cases of silicosis and tuberculosis among workers That was heard by three committees, the various representatives of the State and National Legislation Committee, the Public Rela-

tions Committee, and Committees of two or three Medical Societies, as well as by the Tuberculosis Section of the Massachusetts Medical Society and the New England Roentgenological Society. The result of it all was that we convinced the three committees that no legislation was necessary because the bill had gone through the Senate and no legislation was considered necessary. It has all gone over, and Bill No 1350 now has been given up. There are two bills 1551 and 1553, which now have to do with admissions to the Department of Industry and Labor in which they admonish its members to try if possible to introduce more and more the methods of protecting the workers from dust.

There are several other matters in this report, gentlemen, but they do not need to be taken up here, or to consume time because you can read what some of the activities of the Committee have been.

I move you sir, that the report of this Committee be accepted by the Council and placed on file.

The Vice-President spoke in praise of the report, and Dr G H Bigelow, Suffolk, thought the report was disappointing. On motion by Doctor Mongan, the report was accepted and its recommendations adopted.

Dr A S Begg presented some resolutions of the Norfolk District as regards free treatment privileges in municipal and endowed charitable hospitals. (See Appendix No 9.) The resolutions were adopted by vote.

Dr H P Towle, Suffolk, spoke as follows:

When the Massachusetts Medical Society was young and the membership small, the old-time method of one program and one meeting covered every need. When, however, the membership grew larger and knowledge in medicine increased, the old method became cumbersome and inconvenient. The Section was the natural and inevitable result. The Society recognized the situation and incorporated into its By-Laws a provision for creating new Sections—Article 6, Chapter IV. To-day there are six Sections. Experience has taught that the educational value of the Section method to the general membership is immeasurably greater than that of the one program method. The papers are better prepared and, therefore, more authoritative and interesting and there is no waste of time for the members attending the Annual Meeting.

Since the dermatologists and syphilologists banded themselves together in 1915 the interest in dermatology and syphilis has increased and spread until to-day there are more than four times as many professedly interested in those subjects as there were in 1915. They feel now that the time has come when Dermatology and Syphilis should be represented at the An-

nual Meeting of the Massachusetts Medical Society by a Section of Dermatology and Syphilology for the further advancement of knowledge in these fields but particularly for the more adequate instruction of the medical public. We therefore ask your support in the establishment of such a Section under Article 6 of Chapter IV. Therefore I make the following motion:

That the Massachusetts Medical Society, here in Council assembled hereby authorizes and creates a Section of Dermatology and Syphilology, with all the rights, powers, and privileges of the other constituent Sections of the Society, to meet with the Society at the Annual Meeting of 1935 and annually thereafter.

This was discussed by Doctor Stetson of Franklin and Doctor Mongan, and the motion was passed. On nomination by Dr J H Blaisdell, Middlesex East, the following officers of the new Section were appointed: *Chairman* Dr Charles J White, Boston, *Secretary* Dr William P Boardman, Boston.

Dr W A R Chapin, Hampden, presented the following resolution of the Hampden District Medical Society:

PROPOSED RESOLUTION BY THE LEGISLATIVE COMMITTEE
OF THE HAMPDEN DISTRICT MEDICAL SOCIETY

Whereas at a meeting of the Hampden District Medical Society held in Springfield on the 4th day of April 1934, the matter of proper medical legislation in this State was discussed and

Whereas the State of Massachusetts is the only state in the Union which allows graduates of Class C schools to practice therein and

Whereas this condition draws to Massachusetts all Class C graduates who sooner or later may pass the State Board here with the result that in time Massachusetts will become a Class C state in practice if not in theory while every other state is Class A, and

Whereas for some time past all efforts made to remedy this condition have failed and

Whereas the growing complications of hospital affiliations are becoming more and more embarrassing to those institutions who would hold to established standards and force new registrants in medicine though passed by the Board as fit but who have diplomas from Class C schools, to gravitate to hospitals whose standards are lax thus encouraging low hospital standards and depriving these new men of inspirational medical contacts and proper opportunity for advancement in knowledge and

Whereas this situation affects not only the people of Massachusetts as patients but more particularly the entire medical population Doctors nurses Public Health workers and Hospitals and

Whereas a number of graduates of Massachusetts Class C schools residing in this vicinity are anxious that remedial legislation be passed forcing their schools to attain a Class A rating and

Whereas these men have signified their wish to forward the purpose of House Bill No 118 that would give the Board of Registration in Medicine the power to determine from what schools graduates would be acceptable for examination provided after such bill is passed the Massachusetts Medical Society will go on record as being willing to aid their

schools in attaining Class A rating and will not in any way oppose the attainment of this rating if the school authorities meet the requirements of Class A standards,

Now, Therefore, Be It Resolved that this society recommend to the Massachusetts Medical Society at its next convention in June, 1934, the adoption of a resolution making effective the thoughts contained herein, assuring these men of the society's cooperation

Recommended by

W. A. R. CHAPIN,
A. M. GLICKMAN,
R. R. MEUNTER,
Legislative Committee

April 24, 1934

This was discussed by Dr. J. M. Birnie, Hampden, and by invitation by Dr. E. E. W. Walker, Superintendent of the Springfield Hospital, which is a Class A hospital approved for internes by the American Medical Association. He had had difficulty in admitting as internes graduates of the Middlesex College of Medicine and Surgery, a Class C school. On motion by Doctor Birnie it was voted to refer this resolution to the following committee of five to report at the October meeting of the Council: Reginald Fitz, *Chairman*, C. H. Lawrence, Jr., C. A. Sparrow, E. S. Calderwood, and A. S. Begg.

The Chair nominated and the Council appointed the following committees for the ensuing year

STANDING COMMITTEES

COMMITTEE OF ARRANGEMENTS

W. M. Shedden, *Chairman*, W. R. Morrison,
Horatio Rogers, W. S. Burrage, R. P. Stetson

COMMITTEE OF PUBLICATIONS

R. I. Lee, *Chairman*, Homer Gage, R. B. Osgood,
R. M. Smith, F. H. Lahey

COMMITTEE OF MEMBERSHIP AND FINANCE

D. N. Blakely, *Chairman*, Gilman Osgood, G. C. Caner, J. E. Fish, H. F. Newton

COMMITTEE OF ETHICS AND DISCIPLINE

David Cheever, *Chairman*, W. D. Ruston, S. F. McKeen, A. C. Smith, R. L. DeNormandie

COMMITTEE ON MEDICAL EDUCATION AND MEDICAL DIPLOMAS

Reginald Fitz, *Chairman*, C. H. Lawrence, C. A. Sparrow, E. S. Calderwood, A. S. Begg

COMMITTEE ON STATE AND NATIONAL LEGISLATION

W. H. Rohey, *Chairman*, T. J. O'Brien, F. E. Jones, A. W. Marsh, S. H. Wells Warren

COMMITTEE ON PUBLIC HEALTH

Dwight O'Hara, *Chairman*, E. F. Cody, F. G. Curtis, Gerald Hoeffel, G. D. Henderson

COMMITTEE ON MALPRACTICE DEFENCE

F. G. Balch, *Chairman*, E. D. Gardner, F. B. Sweet, R. P. Watkins, A. W. Allen

COMMITTEE ON PERMANENT HOME

T. J. O'Brien, *Chairman*, S. B. Woodward, O. G. Mixer, J. M. Birnie, R. B. Greenough

There being no further business it was voted to adjourn at 3 10 P. M.

WALTER L. BURRAGE,
Secretary

APPENDIX TO THE PROCEEDINGS OF THE COUNCIL

APPENDIX NO. 1

REPORT OF THE COMMITTEE ON ETHICS AND DISCIPLINE

The Committee held 8 meetings during the year (at only 1 of which was a single member absent) and conducted 7 hearings—the cases of 31 Fellows who were alleged to have violated the Code of Ethics were considered, letters of remonstrance were written to 17, one was recommended to the President for admonition, one was recommended for expulsion after joint action by the Committee on Membership and Finance and the Committee on Ethics and Discipline, under the provisions of Chapter I, Section 8, Clause (C) of the By-Laws, no one was brought before a Board of Trial. Among the alleged offenses, unethical publicity and advertising were by all odds the most numerous,—among others may be mentioned the charging of exorbitant fees, alleged commission of abortion, the giving of false and misleading testimony in Court, conspiracy to steal from insurance companies, and unprofessional conduct toward patients or other physicians.

While the above represents in broad outline the work of the Committee as a whole, it should be known that most of the essential and time-consuming work is transacted by personal interviews, conferences and correspondence with Fellows of the Society by the Chairman and Secretary, and by personal investigations of the sources and credibility of evidence by the Chairman or by some other member of the Committee. It is our impression that the help of the Committee as an arbiter of behavior and as a means of assistance for our Fellows is much more widely sought than was formerly the case. Certainly no week goes by and rarely a two or three day period without a personal or telephonic call to the Chairman for advice or for a ruling on the wisdom, good taste, or ethical character of some course of action. Many of these problems are presented by laymen who have grievances against Fellows of the Society, or who are anxious to establish schemes by which professional medical services may be "sold" to the public—of course with due pecuniary profit to the lay jobber. It is scarcely an exaggeration to say that the Committee could employ with advantage the full time of a skilled agent or investigator together with the occasional services of a lawyer, if it would aspire adequately to examine and appraise all the problems brought before it. Some of these problems may be more definitely noted.

In two instances, during the year, the Committee has taken cognizance of alleged exorbitant fees. In accordance with the policy enunciated in recent annual reports, to the effect that while our Code of Ethics wisely states that a physician, by arrangement with his patient beforehand, may attach any value he chooses to his services, nevertheless the charging of fees totally out of proportion to the value of services rendered or to the patient's means or to both, undermines the confidence of the public in our profession, tends to reduce it to the level of a trade and drives people to public clinics, cultists, or self-medication. An example of what is consid-

ered by the Committee to be an exorbitant charge, is the bill of \$4740 rendered by a Fellow to the estate of a deceased patient whom he had attended for 3½ months. The total estate was about \$12,000. The bill showed that 10 incisions of superficial abscesses under novocaine were classified as operations worth \$150 each, that 45 routine examinations of urine were considered necessary at \$8 each, that white blood counts were worth \$10, that 114 "bed side examinations" at \$10 each were differentiated from \$7 "special treatments of wounds" at \$15 each. The Committee felt that these charges could be justly characterized as raiding an estate and after a hearing voted that the Fellow be admonished by the President. Another instance was the bill for \$2590 for a not unusual rhinological operation rendered by a Fellow to a young married man unemployed whose income was \$4,000. It was shown that the patient had made a conscientious effort to find out beforehand what the operation would cost and thought that he had received assurance that it would not exceed \$1,000 which seemed to the Committee a very generous figure. In this case the Committee wrote a friendly letter to the physician expressing its conviction that he undoubtedly had a very exaggerated idea of the patient's resources and pointing out the harm that the profession might suffer from acquiring a reputation for mercenary rather than altruistic motives.

It is hoped that the Society realizes that while an investigation by our Committee may suggest, to the initiated a presumption of irregular or wrongful actions by a Fellow, the fact is that a large part of our work is concerned with the protection and exoneration of our Fellows from unfounded accusations and criticism. When a Fellow is found guilty by other authority of misdemeanors incompatible with the ethical standards of our Society we do not accept such a verdict if any doubt of its justice exists. A case which has interested us and on which we have spent much time this winter is that of a hitherto respected practitioner, a former member of this Council who is at this moment serving 2½ to 4 years in the State prison, for administering a drug with intent to cause a miscarriage. The physician and his patient emphatically assert their innocence and the evidence on which conviction was based seems dubious to the Committee. These facts together with the apparently accepted disbelief on the part of the medical profession that any drug exists which will produce miscarriage and the severity of the sentence in an age when manifest malefactors on parole or with suspended sentences go unpunished moved the Committee to make an investigation which is still going on, but in the mean time in view of the physician's conviction and sentence and the consequent revocation of his license to practice the Committee feels obliged to recommend his expulsion under Chapter I, Section 3, Clause (C) of the By-Laws.

The modern trend toward economic reorganization of medical practice and the willingness of laymen to manage our affairs for us were illustrated by schemes which were brought to our attention. A business man strongly supported by one of our Fellows allegedly representing a group of physicians proposed a plan by which he should establish an agency to secure for the employees of great corporations and their families satisfactory medical services at reasonable rates from a group of competent physicians representing the various specialties. The officers of the corporations were to advise their employees of this service and urge them to make use of it—the agent's remuneration was to be on a percentage basis of fees collected. This plan seemed to our Committee to comprise numerous un-

ethical features including a type of contract practice, the obtaining of patients by a form of advertising, the division of fees and the loss of the independent relations of physician and patient. The Committee ruled that the enrollment of Fellows of the Society in this plan would be contrary to the spirit of the Code of Ethics and to the best interests of the profession. Another business man proposed a plan along familiar lines which the Committee has disapproved on other occasions, namely, the organization of a stock company to supply under contract medical services by physicians for a fixed sum per year thus destroying the free relationship of physician and patient, obtaining patients by advertising and diverting to lay promoters a large part of the fees paid for medical service. The Committee disapproved of participation in the plan by Fellows of the Massachusetts Medical Society.

One form of abuse of medical ethics—the improper testimony of physicians in suits for malpractice has not come to the attention of the Committee during this year or indeed in recent years probably because of the efficient way in which the Committee on Malpractice Defense handles its problems. Another phase of this subject however is of considerable interest, namely whether or not our Society through the Committee on Ethics and Discipline or otherwise should take cognizance of the character of testimony offered by Fellows in courts of law especially in criminal cases. A physician reading in the daily press reports of "expert" testimony of medical witnesses brought out under the shiffling guidance of counsel for the defense can hardly fail at times to be disgusted by its partiality and by its perversion of medical learning to thwart the ends of justice. Let the intent and motive of any criticism or disciplinary action on the part of the organized profession could be similarly misconstrued and perverted so as to create serious prejudice in the minds of jury and public alike against our Society. It is a situation filled with dynamite to be handled if at all with great circumspection.

Attention has repeatedly been called in these reports to the difficulty of adjusting our traditional avoidance of anything which may savor of personal advertising to the modern craze for publicity which forces on us physicians—both willing and unwilling the attention of the newspaper and radio audience. It becomes more and more an accepted doctrine that the medical profession must "sell" itself to the public and educate the people in personal as well as in public health matters. To this end public lectures, radio broadcasts and newspaper write-ups on medical topics have become every-day occurrences. The wisdom of a good deal of this propaganda is doubted by thoughtful observers but it appears certainly desirable that the dignity of the profession should be preserved by the discouraging of personal publicity. Fellows who seek publicity under various guises in the press or on the air and who are remonstrated with can point with some justice to the example of others of the profession who under the guise of giving public instruction are brought even more effectively to public notice and can inquire as to what the difference may be. The Committee on Ethics and Discipline has long maintained that addresses on medical topics for public instruction should be signed or sponsored by a committee or officer of a medical society or school rather than by an individual or should be given by a physician not engaged in local private practice and should be on general topics rather than on the diagnosis and treatment of concrete symptoms of disease and that every effort should be made to prevent the incursion by reporters of laudatory puffs about the writer. The Committee acknowledges

with pleasure the action of three Fellows of the Society who, on having their attention called to criticism by other Fellows of offensively laudatory "write-ups" of their work, have written letters to the *New England Journal of Medicine* disavowing any responsibility therefor and supporting the efforts of the Committee to discourage such publicity.

An oft recurring question concerns the propriety of consultations with or participation in the activities of irregular practitioners of the healing art comprehended under the term "cultists." The Committee disapproves of consultations between Fellows of the Massachusetts Medical Society and cultists. A consultation implies a conference between persons holding similar views and concepts of the basic scientific principles underlying a problem. If their views are irreconcilable and fundamentally different, no true consultation can be possible. Our Code of Ethics states that "physicians should encourage sound medical learning, and uphold in the community correct views of the powers and limitations of the science and art of medicine." It seems certain that a consultation between a scientific and regularly trained physician and a cultist cannot fail to lend countenance to and dignify such a person and his cult. Naturally this expression of opinion by the Committee should not deter a Fellow from offering his help in case of emergency, at the same time letting it be known that he is not in sympathy with the cultists' creed. The Committee holds a similar view about the giving of lectures or talks by our Fellows upon medical topics, before gatherings of irregular practitioners—surely such an act cannot fail to dignify and encourage the latter.

A somewhat similar problem is presented by the giving of lectures by our Fellows to students in schools whose standards of education are so low that their diplomas are not recognized by our Council. This has been disapproved by the Committee, on the ground that such a course does not "encourage sound medical learning." In the case of a "club" composed of students and graduates of such an institution but having no official connection with it, the Committee realizing that under certain circumstances, these graduates may be eligible for Fellowship in our Society, ruled that a Fellow would not be criticized as unethical if he lectured before it, but that it considered such action unwise, especially in view of the fact that there was evidence that the giving of such lectures by our Fellows was offered as evidence of its good standing, by the authorities of the school in question.

One of the unfortunate aspects of the present economic depression is that the actual or threatened financial distress of large numbers of our profession leads inevitably to irregularities of conduct and deviations from the highest standards of practice if such relaxation seems to promise more financial return. It is much to the credit of our Fellows that in so few instances have such temptations been yielded to.

DAVID CHEEVER, *Chairman*
WARREN D. RUSTON
SYLVESTER F. MCKEEV
ALFRED C. SMITH
ROBERT L. DENORMANDIE

APPENDIX NO. 2

REPORT OF THE COMMITTEE ON MEDICAL EDUCATION AND MEDICAL DIPLOMAS

During the past year this Committee has held four meetings. Two have been held for the purpose of scrutinizing the diplomas of candidates for fellow-

ship in the Society who are graduates of medical colleges unrecognized by the Council, and two for the purpose of discussing matters other than routine pertaining to problems on medical education and diplomas.

The Committee has examined by personal interview in the neighborhood of thirty candidates for fellowship in the Society. Twenty-one of these, their diplomas proving acceptable to the Committee, have passed the examinations of the Censors and have been permitted to join the Massachusetts Medical Society. During the past year, therefore, nine per cent of the new Fellows are graduates from unrecognized schools.

The Committee has meticulously studied Section 5 in Chapter VII of the revised By-Laws of the Society and believes that the description of our duties here laid down does much to strengthen the Committee's authority. We are especially impressed with the second paragraph:

"It (the Committee) shall have power to recognize a medical diploma from a foreign medical school or college or from a domestic school or college not on the list recognized by the Council, when such a diploma is presented by an applicant who has practiced for a minimum of five years, offers proof to the Committee that he is a capable and conscientious practitioner of medicine, and is recommended in confidential communications by a number of his colleagues who are Fellows of the Society. The medical diploma and written recommendations of colleagues shall be sent by the district secretary to the chairman of the Committee at least three weeks before any given examination. The Committee shall interview personally all such applicants for fellowship."

According to our interpretation of this paragraph, graduates from unrecognized medical colleges who in future wish to become Fellows of the Society must be better known than heretofore and must clearly demonstrate their capabilities not only to the examining Censors but also to the Committee on Medical Education and Medical Diplomas before they can be elected. Moreover, they must be recommended by a number of impartial Fellows through the Secretaries of the various District Societies. This proceeding should do away with the valueless type of commendatory letters which candidates have been in the habit of obtaining from uncritical friends, and should make the attainment of fellowship in the Society more difficult and therefore more valuable for candidates of uncertain medical education.

Anticipating that as soon as the revised By-Laws become effectual the Council may at once direct revision of the list of medical schools and colleges to be recognized by that body, we have completed such a revision. The Committee on Medical Education and Medical Diplomas recommends that the following list of medical schools and colleges now be recognized by the Council:

*University of Alabama School of Medicine
University of Arkansas School of Medicine
University of California Medical School
University of Southern California School of Medicine
Stanford University School of Medicine
College of Medical Evangelists
University of Colorado School of Medicine
Yale University School of Medicine
George Washington University School of Medicine
Georgetown University School of Medicine
Howard University College of Medicine
†University of Georgia School of Medicine

Emory University School of Medicine
 Rush Medical College, University of Chicago
 The School of Medicine of the Division of the Biological Sciences, University of Chicago
 Northwestern University Medical School
 University of Illinois College of Medicine
 Loyola University School of Medicine
 Indiana University School of Medicine
 State University of Iowa College of Medicine
 University of Kansas School of Medicine
 University of Louisville School of Medicine
 Tulane University of Louisiana School of Medicine
 Louisiana State University Medical Center
 University of Maryland School of Medicine and College of Physicians and Surgeons
 Johns Hopkins University School of Medicine
 Harvard University Medical School
 Boston University School of Medicine
 Tufts College Medical School
 University of Michigan Medical School
 Wayne University, College of Medicine
 University of Minnesota Medical School
 *University of Mississippi School of Medicine
 Washington University School of Medicine
 *University of Missouri School of Medicine
 St. Louis University School of Medicine
 University of Nebraska College of Medicine
 Creighton University School of Medicine
 *Dartmouth Medical School
 Columbia University College of Physicians and Surgeons
 Albany Medical College
 University of Buffalo School of Medicine
 Long Island College of Medicine
 New York Homeopathic Medical College and Flower Hospital
 Syracuse University College of Medicine
 New York University University and Bellevue Hospital Medical College
 Cornell University Medical College
 University of Rochester School of Medicine
 *University of North Carolina School of Medicine
 *Wake Forest College School of Medicine
 Duke University School of Medicine
 *University of North Dakota School of Medicine
 Western Reserve University School of Medicine
 Ohio State University College of Medicine
 University of Cincinnati College of Medicine
 University of Oklahoma School of Medicine
 University of Oregon Medical School
 University of Pennsylvania School of Medicine
 Jefferson Medical College
 Woman's Medical College of Pennsylvania
 Hahnemann Medical College
 University of Pittsburgh School of Medicine
 Temple University School of Medicine
 Medical College of the State of South Carolina
 *University of South Dakota School of Medicine
 Vanderbilt University School of Medicine
 University of Tennessee College of Medicine
 Meharry Medical College
 University of Texas School of Medicine
 Baylor University College of Medicine
 *University of Utah School of Medicine
 University of Vermont College of Medicine
 University of Virginia Department of Medicine
 Medical College of Virginia
 *West Virginia University School of Medicine
 University of Wisconsin Medical School
 Marquette University School of Medicine
 University of Alberta Faculty of Medicine
 University of Manitoba Faculty of Medicine
 Dalhousie University Faculty of Medicine
 University of Toronto Faculty of Medicine
 Queen's University Faculty of Medicine
 University of Western Ontario Medical School
 McGill University Faculty of Medicine

University of Montreal Faculty of Medicine
 Laval University Faculty of Medicine
 *University of Saskatchewan School of Medical Sciences

These schools offer only first two years of medical course no longer awarding medical diplomas

†Only diplomas previous to 1934 are to be recognized

Two members of the Committee attended the meeting of the Association of American Medical Colleges held in Rochester, Minnesota last fall, and the Congress on Medical Education, Licensure and Hospitals of the American Medical Association held in Chicago in February. The Committee continues to consider it an important duty for its members to attend such meetings as regularly as possible, not only to be able to inform Fellows at home regarding any interesting new developments that may come forth at such gatherings, but also so that our experience on matters dealing with Medical Education and Medical Diplomas may be of help to other State Medical Societies throughout the country.

The Committee regards with great pride the progressive and public spirited attitude assumed by the Society in questions pertaining to medical education. We feel that the experiment in postgraduate instruction carried out by the Society during the past year has been notably successful and is an undertaking worth carrying forward. The Committee on Medical Education and Medical Diplomas by virtue of having two members on the Committee on Postgraduate Medical Instruction has been in active liaison with the latter Committee during the entire year and continues eager to do all in its power to establish in Massachusetts a well-organized method by which the Society shall offer its Fellows continuously improving opportunities to keep up with the increasing ramifications of medical knowledge.

We believe that there is one important aspect of postgraduate instruction in Massachusetts so far unconsidered which deserves study. This deals with the training of interns. We have made a preliminary survey of Massachusetts internships and already have reported the results of the survey to the Council. We ask for authority to study further the internships available to young doctors in Massachusetts having in mind inspection of all hospitals in the state which wish to go on record as being properly qualified to offer intern training. We believe that it would be very advantageous to medical students if the internships available in Massachusetts could be formally classified and described by the Society and that systematic inspection from time to time would be advantageous to the various hospitals.

Finally we advocate that the Society be moved to offer an annual prize of \$50 for the best written and most comprehensive case report submitted by interns holding any of the rotating internships now offered in Massachusetts and approved by the American Medical Association. Such a prize would do much to stimulate medical writing among younger men and would help to disseminate throughout the State the importance and interest of keeping abreast of medical literature. The prize each year might be awarded by an editorial committee appointed by the President including himself or his representative a member of the Committee on Publications, a member of the Committee on Medical Education and Medical Diplomas a member of the Editorial Board of the *New England Journal of Medicine* and a member representing the President of the Boston Medical Library.

REYNOLD FITZ, *Chairman*
 C. H. LAWRENCE,
 C. A. SPARROW,
 E. S. CALDERWOOD,
 A. S. BEGG

APPENDIX NO. 3

REPORT OF THE COMMITTEE ON PUBLIC HEALTH

During the past year the Committee on Public Health has been studying the periodic health examination. The Division of Adult Hygiene of the State Department of Health precipitated this study by asking the Committee to cooperate in an educational campaign intended to popularize health examinations in this State.

The Committee published a communication on the subject in the January 25 issue of the *New England Journal of Medicine*. This communication was based upon the invited opinions of members of the Council, and was drafted with the cooperation of the State Department of Public Health. A recent poll of the members of this Council reveals that the communication as printed was satisfactory to 90 per cent of the members replying. In so far as the Council represents the Fellows of the Society, then, the Committee feels that for the present this communication can be accepted as it stands.

On the other hand, the Public Health Council has advised the State Department of Public Health that "The desirability of periodic health examinations annually versus a physical examination to clear up indefinite or minor ailments or symptoms was discussed at length and it was the consensus of opinion of the medical members of the Council that the annual periodic health examination formerly advocated by the Department is still desirable and the Department should continue to recommend it when ever the opinion of the Department is requested." This leaves the State Department in a somewhat awkward position.

In the *American Medical Association Bulletin* for March of this year there is a paper on the subject by Dr. Bauer, who concludes as follows: "The periodic health examination seems to be at this time, in a status which all movements reach sooner or later. The initial stage of enthusiasm for a new idea has been passed. A lull has come. Physicians are doubting, considering, questioning. It is a wholesome indication. If the conception of regular health examinations at intervals is sound it will emerge from this phase and be carried forward, if it is unsound, it will die."

DWIGHT O'HARA, *Chairman*,
E. F. CODY
F. G. CURTIS,
G. N. HOFFEL,
G. D. HENDERSON.

REPORT OF COMMITTEE ON PUBLIC EDUCATION

This Committee has continued to cooperate with the State Department of Public Health in the joint sponsorship of weekly broadcasts of a popular variety on medical topics. A recent survey by the Division of Adult Hygiene indicated that there are approximately forty thousand people listening to these broadcasts each week. Other groups than ours have broadcast similar series—in some cases quite as good as our own. When this was the case we could only be pleased that the work was so well done.

The Harvard Medical School has continued its public lectures with their associated newspaper publicity, sometimes of a highly personal nature. Probably anyone who toys with "the Devil's of the press" will find, as Osler said, that "sooner or later she is sure to play the harlot."

The rivalry between the broadcasting companies and the newspapers which has been referred to in

our previous reports has during the past few months been developed to the point where the broadcasting companies are now gathering their own news items instead of depending upon the newspapers for this material as heretofore. The time when we might use the same copy for both radio and newspaper publicity has therefore probably passed.

The Committee has no desire to expand its activities to include the newspapers, but it is interested in the effectiveness of any method used to influence the public. Some of its members question the worth of any of these methods. The profession is now dipping its toes in the waters of publicity. Some day it must decide whether it is going to go in all over or go back and put on its clothes.

The Committee has referred in previous reports to the "better health" theme which has woven itself into the radio programs of the commercial purveyors. Within the past few days we have been asked to present the resolutions concerning those abuses to the Society. This we plan to do at the annual meeting of the Society tomorrow.

DWIGHT O'HARA, *Chairman*

APPENDIX NO. 4

REPORT OF THE COMMITTEE ON STATE AND NATIONAL LEGISLATION

After the Annual Meeting of 1933, an educational campaign was planned and the Chairman with a member of the committee, visited sixteen cities throughout the State in the summer and fall of that year and six cities in 1934. District medical societies, hospital staffs and medical groups were addressed and methods of organization were specified. It outlined the value of personal contact with influential citizens and especially with local legislators was emphasized. The aid of allied professions, as the State organizations of dentistry, pharmacy and nursing was obtained for our mutual advantage.

When the Legislature convened in January 1934, the various bills were studied and a definite action was decided upon each one. Forty-six bills were introduced which would have influenced the teaching of medicine or the practice of the healing art in this State. Members of our committee attended fourteen hearings during the present session.

Our present economic problems have caused the average physician to become 'politically minded'. We refer particularly to the physician with a small equity in a home with children at college or with heavy overhead expenses. We kept in close contact with federal and civic bills drawn to influence compensation or payment to physicians for welfare service.

The interest taken by physicians was state-wide and every local legislative committee is worthy of honorable mention for its active cooperation. Our method of having groups of physicians accompanied by influential citizens of a community present the principles involved in each important bill to their Legislators has been most satisfactory and we advise the continuance of this plan. Our By-Laws state that the Committee on State and National Legislation "shall oppose such measures as it may deem contrary to the public welfare and support and initiate measures which promise to advance a higher standard of medicine and promote the public welfare. We therefore recommend that no bills be introduced by members of the Massachusetts Medical Society unless said bills have been submitted to your committee for approval or disapproval. A member may introduce a petition as an individual but it is unwise to permit him to state the position of

our Society at a hearing or elsewhere when neither the Council nor the Committee on State and National Legislation has given him authority to do so

In brief our report is comparable to that of other years. We did not succeed in having any constructive legislation passed but we have been able to prevent the passage of bills which would have lowered the present standard of practicing the healing art in Massachusetts

WILLIAM H ROBESY *Chairman*,
THOMAS J O'BRIEN
FREDERICK E JONES
ARTHUR W MARSH
SHIELDS WARREN

APPENDIX NO 5

REPORT OF THE COMMITTEE ON MALPRACTICE DEFENCE

This Committee has been impressed by the fact that there has not been an increase in the number of cases brought to its attention during the past year as was expected due to the financial condition of the times

There have been only two new cases during the period from May 11 1933 to May 13 1934. There were ten cases pending up to May 11 1933. One of these cases has been disposed of leaving eleven cases pending at the present time. The case that was disposed of during the past year was one that was dismissed for lack of prosecution under the rule just as it was about to be reached for trial.

The Committee has not been informed of any unfair testimony in Court by any members of the Society during the past year.

FRANKLIN G BALCH *Chairman*
EDWIN D GARDNER
FREDERICK B SWEET
ROYAL P WATKINS
ARTHUR W ALLEN *Secretary*

APPENDIX NO 6

REPORT OF THE COMMITTEE ON PERMANENT HOME

Our present plan of paying a proportionate rate of maintenance to the Boston Medical Library continues until September 30 1936. The headquarters are being used much more frequently by members and by committees and the service rendered by the clerical force of the *New England Journal of Medicine* has been most satisfactory.

Your committee carefully considered the offer of a realtor concerning a certain estate on Beacon Street, Boston. While the price was satisfactory the location of the property and the interior arrangement were not suitable for our needs as a permanent home. We voted unanimously not to accept it.

Our Building Fund has a book value of \$52 679 and we hope to increase this total by future bequests and contributions.

THOMAS J O'BRIEN *Chairman*
SAMUEL B WOODWARD
CHARLES G MIXTER
JOHN M BIRNIE
ROBERT B GREENOUGH

APPENDIX NO 7

REPORT OF THE COMMITTEE ON POSTGRADUATE MEDICAL INSTRUCTION

The Committee on Postgraduate Instruction wishes to submit its first annual report. The pro-

gram was begun a little over a year ago the first course was started in Plymouth District on October 9 1933 the last course to finish was Bristol North District on May 15, 1934. During this first teaching year all districts of the Society appointed chairmen on postgraduate instruction; without exception they have all functioned well. Much credit for the success of the courses is due to the unstinted interest and labor of these district chairmen.

In all two hundred and thirty-two sessions were held in the various districts. These covered eighteen subjects. A faculty of one hundred and seventy instructors was organized they went in teams of two or three. This method of teaching has been much appreciated by those who took the courses. Much credit and praise are due this group of devoted teachers who have given so generously of their time and effort to render a service which will have a lasting value to the Fellows of the Massachusetts Medical Society.

Although the Massachusetts Medical Society is not the first to start this type of extension teaching, our methods have attracted widespread interest. Already other state societies have written to the committee for information in regard to the plan of postgraduate instruction as sponsored by this Society.

On February 7 1934 the district chairmen on postgraduate instruction held a meeting in Boston and voted unanimously to ask that the Council authorize the continuation of this work next year. At the present time the committee is preparing a new program which will be presented for the consideration of the Society in the near future.

A statistical summary of the past year's work follows:

Total number of postgraduate courses offered	22
Total number of postgraduate courses chosen	18
Total number of sessions	232
Number of district societies cooperating (100%)	18
Number of places where courses were given	24
Total registration for all courses	1002
Largest registration for one course	110
Smallest registration for one course	10
Total faculty	170

The Committee wishes to thank all officers and Fellows of the Society who have contributed to the success of this work. The Committee considers that the project of giving extension postgraduate instruction is very much worth while and recommends that a committee be appointed to arrange the program for the coming year.

FRANK R OBER *Chairman*
LEROY E PARKINS *Secretary*

APPENDIX NO 8

REPORT OF THE COMMITTEE ON PUBLIC RELATIONS

I. Relative to hospital Plans A and B as designed for some nineteen hospitals in Metropolitan Boston, the Massachusetts Medical District Societies of Suffolk Middlesex South and East and Norfolk have in substance voted adversely to the acceptance of either plan. It may be that some time in the future adequate discussion between the hospital executives and a representative Medical Commission formed by the Committee on Public Relations may result in a mutually satisfactory plan as it is obvious that neither can exist and serve to the best advantage its several communities without the close cooperation of both parties.

APPENDIX NO 3

REPORT OF THE COMMITTEE ON PUBLIC HEALTH

During the past year the Committee on Public Health has been studying the periodic health examination. The Division of Adult Hygiene of the State Department of Health precipitated this study by asking the Committee to cooperate in an educational campaign intended to popularize health examinations in this State.

The Committee published a communication on the subject in the January 25 issue of the *New England Journal of Medicine*. This communication was based upon the invited opinions of members of the Council, and was drafted with the cooperation of the State Department of Public Health. A recent poll of the members of this Council reveals that the communication as printed was satisfactory to 90 per cent of the members replying. In so far as the Council represents the Fellows of the Society, then, the Committee feels that for the present this communication can be accepted as it stands.

On the other hand, the Public Health Council has advised the State Department of Public Health that "The desirability of periodic health examinations annually versus a physical examination to clear up indefinite or minor ailments or symptoms was discussed at length and it was the consensus of opinion of the medical members of the Council that the annual periodic health examination formerly advocated by the Department is still desirable and the Department should continue to recommend it when ever the opinion of the Department is requested." This leaves the State Department in a somewhat awkward position.

In the *American Medical Association Bulletin* for March of this year there is a paper on the subject by Dr. Bauer who concludes as follows: "The periodic health examination seems to be at this time, in a status which all movements reach sooner or later. The initial stage of enthusiasm for a new idea has been passed. A lull has come. Physicians are doubting, considering, questioning. It is a wholesome indication. If the conception of regular health examinations at intervals is sound it will emerge from this phase and be carried forward. If it is unsound, it will die."

DWIGHT O'HARA, *Chairman*

E. F. CODY,

F. G. CURTIS,

G. N. HOFFEL,

G. D. HENDERSON.

REPORT OF COMMITTEE ON PUBLIC EDUCATION

This Committee has continued to cooperate with the State Department of Public Health in the joint sponsorship of weekly broadcasts of a popular variety on medical topics. A recent survey by the Division of Adult Hygiene indicated that there are approximately forty thousand people listening to these broadcasts each week. Other groups than ours have broadcast similar series—in some cases quite as good as our own. When this was the case we could only be pleased that the work was so well done.

The Harvard Medical School has continued its public lectures with their associated newspaper publicity sometimes of a highly personal nature. Probably anyone who toys with "the Delliiah of the press" will find, as Osler said that "sooner or later she is sure to play the harlot."

The rivalry between the broadcasting companies and the newspapers which has been referred to in

our previous reports has during the past few months been developed to the point where the broadcasting companies are now gathering their own news items, instead of depending upon the newspapers for this material as heretofore. The time when we might use the same copy for both radio and newspaper publicity has therefore probably passed.

The Committee has no desire to expand its activities to include the newspapers but it is interested in the effectiveness of any method used to influence the public. Some of its members question the worth of any of these methods. The profession is now dipping its toes in the waters of publicity. Some day it must decide whether it is going to go in all over or go back and put on its clothes.

The Committee has referred in previous reports to the "better health" theme which has woven itself into the radio programs of the commercial purveyors. Within the past few days we have been asked to present the resolutions concerning those abuses to the Society. This we plan to do at the annual meeting of the Society tomorrow.

DWIGHT O'HARA, *Chairman*

APPENDIX NO 4

REPORT OF THE COMMITTEE ON STATE AND NATIONAL LEGISLATION

After the Annual Meeting of 1933 an educational campaign was planned and the Chairman with a member of the committee, visited sixteen cities throughout the State in the summer and fall of that year and six cities in 1934. District medical societies, hospital staffs and medical groups were addressed and methods of organization were specifically outlined. The value of personal contact with influential citizens and especially with local legislators was emphasized. The aid of allied professions, as the State organizations of dentistry, pharmacy and nursing was obtained for our mutual advantage.

When the Legislature convened in January, 1934 the various bills were studied and a definite action was decided upon each one. Forty-six bills were introduced which would have influenced the teaching of medicine or the practice of the healing art in this State. Members of our committee attended fourteen hearings during the present session.

Our present economic problems have caused the average physician to become 'politically minded'. We refer particularly to the physician with a small equity in a home with children at college or with heavy overhead expenses. We kept in close contact with federal and civic hills drawn to influence compensation or payment to physicians for welfare service.

The interest taken by physicians was state-wide and every local legislative committee is worthy of honorable mention for its active cooperation. Our method of having groups of physicians accompanied by influential citizens of a community present the principles involved in each important bill to their Legislators has been most satisfactory and we advise the continuance of this plan. Our By-Laws state that the Committee on State and National Legislation "shall oppose such measures as it may deem contrary to the public welfare and support and initiate measures which promise to advance a higher standard of medicine and promote the public welfare." We therefore recommend that no bills be introduced by members of the Massachusetts Medical Society unless said bills have been submitted to our committee for approval or disapproval. A member may introduce a petition as an individual but it is unwise to permit him to state the position of

an industrial case there in the semi private rooms?

	Yes	No	Ans
Hospitals in Boston	4	4	2
Hospitals outside Boston	26	8	50

We recommend that all patients who come under the provision of the Workmen's Industrial Compensation Act on admission to a hospital be referred to private or semi private rooms and that the patient be required to choose a physician who will be responsible for his care and treatment. The Secretary of the Massachusetts Medical Society shall inform by letter the trustees and staff of each hospital, admitting Industrial Accident cases to its facilities, of the action of the Council of the Massachusetts Medical Society.

III. In July, 1933 there was appointed by the Governor a board of five to inquire into the aspects of certain industrial diseases, e.g., silicosis and allied diseases in relation to tuberculosis. The Public Relations Committee was vitally interested in this matter because of the intention of the Legislative Act to enlarge the functions of the State Department of Health in establishing and training a personnel of diagnosticians, as an integral part of the Department of Health, who would examine and recommend the disposition of some 8650 men in industry, the number to be examined probably increasing as other fields were opened up. The Act provided in part as follows

Section 5 Entrance Physical Examinations

That legislation be enacted to provide (a) that no person not previously so employed in the Commonwealth shall engage in any occupation in the granite or foundry industry in which there may be harmful exposure to dust unless his physical fitness so to do has been determined, within the twelve months next preceding, by the Department of Public Health by means of an examination, (b) that any person not prohibited by statute or regulation thereunder from engaging in such occupation and who has not been so examined within the twelve months next preceding shall be given opportunity to be so examined within thirty days after filing with the department a written application including a signed statement that it is his purpose to engage in such an occupation, (c) that the examinee shall be notified in writing, within ten days after such examination, whether or not he is found physically fit to engage in such an occupation (d) that if an examinee found unfit files with the department within ten days after such notification a written appeal from the finding, it shall be reviewed by the Medical Board of Review provided for in the following recommendation numbered fourteen, which board shall hold a hearing if requested by the examinee and shall render to the department a decision which shall be final and of which notice shall be sent to the examinee as hereinbefore provided, (e) that no member or employee of the department or of the board, nor any of their records shall be subject to subpoena in connection with the case of any person so examined, nor shall any such records be made public except at a hearing as hereinbefore provided, (f) that there shall be issued to each examinee found physically fit to engage in such occupation a certificate of fitness which shall bear the signature of the examinee and the date of the examination and shall be duly executed under the direction of the commissioner of public health and (g) that no further examination of the lungs shall

be necessary as a condition precedent to such employment of a person to whom a certificate of fitness has been issued within the twelve months next preceding

Section 6 Annual Physical Examinations

That legislation be enacted to provide (a) that every person engaged in any occupation in the granite or foundry industry in which there may be harmful exposure to dust shall annually be examined by the Department of Public Health to determine his physical fitness to continue in any such occupation (b) that no finding of such physical unfitness shall be made except on evidence of active pulmonary tuberculosis, (c) that every examinee found unfit so to continue shall be so notified in writing, (d) that if an examinee found unfit files with the above department within ten days after such notification a written appeal from the finding, it shall be reviewed by the Medical Board of Review provided for in the following recommendation numbered fourteen which board shall hold a hearing if requested by the examinee and shall render to the above department a decision which shall be final, (e) that, if the decision is contrary to the finding reviewed the examinee shall be so notified in writing, (f) that, if the decision confirms the finding reviewed, or if an examinee found unfit fails to appeal as hereinabove provided, the Department of Public Health shall in writing notify the Department of Industrial Accidents and the Department of Labor and Industries that the examinee has been found physically unfit to continue in any occupation as hereinbefore described and the last named department shall so notify the examinee and his employer, if any (g) that an examinee so found unfit may apply, not less than twelve months after such finding, for a reexamination in accordance with provisions (b), (c), (d), (e) and (f) of the recommendation next preceding any certificate of fitness issued in such case to bear the word "readmitted", (h) that any person who, having received notice of physical unfitness from the Department of Labor and Industries as hereinbefore provided, continues in any occupation for more than thirty days in contravention thereto or returns to such occupation except after readmission as hereinbefore provided shall forfeit all rights to compensation for disability due to pulmonary disease under the Workmen's Compensation Act, (i) that no member or employee of the Department of Public Health or of the Medical Board of Review, nor any of their records shall be subject to subpoena in connection with the case of any person examined as hereinbefore provided nor shall any such records be made public except at a hearing as hereinbefore provided, (j) that the Division of Tuberculosis of the Department of Public Health shall give special preference in the extension of its facilities to persons who, deprived of employment because of a finding of unfitness as hereinbefore provided, have been resident in the Commonwealth on the effective date of this legislation or for one year prior to the date of such finding, (k) that the Division of Public Employment Offices of the Department of Labor and Industries shall give special preference in the extension of its facilities to the dependents of such persons, (l) that the Division of Public Employment Offices of the Department of Labor and Industries and the Division of Rehabilitation of the Department of Education shall give special preference in the extension of their facilities to such persons if subsequently restored to fitness for employment, (m) that every person who having been deprived

II On December 27, 1933 the Public Relations Committee met with the Secretary of the Claims Executive Committee of the Casualty Insurance Companies relative to the proposals made last May as presented to and approved by the Council of the Massachusetts Medical Society in June. He explained that the insurance companies could not take on added industrial expense as might be entailed by our recommendation No 1, relative to admitting patients to hospitals as private patients—as they could not estimate the expense and they did not think anyone had figures that would be reliable. Furthermore he said that no one except the staff doctors would benefit. Finally it was unacceptable and the insurance companies preferred to carry on, as heretofore without payment to the doctors for individual accident cases admitted to the wards for hospitalization. No 2 in re consultations, the insurance companies made no objection and continued to indorse the proposition. No 3 relative to the fairness of our charges—requires no comment. No 4 concerns two weeks' treatment and the record sheet. The insurance companies are getting out a new uniform record sheet which they propose to use as a unit. No suggestion was offered for distribution or the availability of these in blank, and no proposal was made to alter the "present two weeks treatment except in exceptional cases." No 5 has to do with the recommendation of a board of three medical men to advise the Industrial Accident Board as to their findings in disputed cases. Here the insurance companies took no action—they would not support it, and neither would they contest it. They "leaned away from the recommendation, but would go along with the Board." No 6—the Insurance Companies contend that the rules of evidence do not allow of an affidavit of the individual's physical condition and they therefore are antagonistic to the recommendation.

The end result of our conference was that, contrary to the opinion given to us, the insurance companies prefer to operate along legalistic lines rather than the cooperative methods outlined.

Meanwhile the Public Relations Subcommittee learned that in several communities industrial accident cases were automatically admitted to the hospitals as private or semi private cases, as the individual was required to choose a physician for his care, signing a paper so indicating and then two witnesses affixing their signatures, so that the following letter and questionnaire were sent out to various hospitals throughout the State

HOSPITALIZATION OF WORKMEN'S COMPENSATION CASES

The following recommendation of this committee was endorsed in June, 1933, at a meeting of the Council of the Massachusetts Medical Society

"As the employers have paid premiums for the care of the working man's injuries it is unreasonable to expect that doctors inside or outside of hospitals should take care of those cases without pay. We should ask that a patient sufficiently injured to need hospitalization should be recommended to a hospital as a *private patient*. We affirm that nurses and other agents should act only under the authority of the physician in charge of the case. Both the insurance companies and the doctors should be primarily interested in the early return of that patient to his work with as good a functional result as could be obtained. We believe that that principle is better business both for the

insurance companies and the injured party, the hospitals and the attending doctor."

Your committee was aware that a number of hospitals in the state are now admitting industrial cases only to the semi private rooms, thus allowing the attending physician to charge for his services. In order to find out how general this practice is, the following questionnaire was sent out to one hundred and twenty hospitals outside the city of Boston. Essentially the same inquiry was made by the Norfolk District Medical Society to twenty hospitals within Boston limits. Some hospitals particularly in the Boston group, because of the nature of their work, have no occasion to admit industrial cases. Eighty per cent of the balance in both groups admitting industrial cases have returned the questionnaire, and the tabulated results are as follows—

- 1) In your hospital, are industrial cases admitted as ward patients, in which case the attending physician receives no compensation?

Yes No No Ans

Hospitals in Boston 6 1 1

Hospitals outside Boston 13 71 0

Two hospitals in the Boston group answered "Yes and No." Seven out of the thirteen hospitals outside Boston answering "Yes" were located in Boston suburbs.

- 2) In your hospital, are industrial cases admitted only as private patients to the semi private rooms, in which case the attending physician does receive compensation?

Yes No No Ans

Hospitals in Boston 4 4 2

Hospitals outside Boston 71 13 0

Eighteen out of the seventy-one hospitals outside Boston answering "Yes" admit industrial cases to the wards as private ward cases. Six of these eighteen are located in Boston suburbs.

- 3) Is your staff in favor of recommending to the trustees of your hospital that any injured patient, coming under the provisions of the Workmen's Compensation Act shall be received on a private or semi private base charge, shall be allowed to choose from the staff a physician who shall be responsible for his treatment and care, and who shall be eligible to make reasonable charges for his services?

Yes No No Ans

Hospitals in Boston 8 0 2

Hospitals outside Boston 69 2 13

- 4) Does your hospital have a "closed" staff?

Yes No No Ans

Hospitals in Boston 8 2 0

Hospitals outside Boston 40 41 3

- 5) Does your hospital have a "courtesy staff" which enables any reputable physician to treat industrial cases in the semi private rooms?

Yes No No Ans.

Hospitals in Boston 5 5 0

Hospitals outside Boston 67 16 1

- 6) If tightly "closed", would, in your opinion, your staff be willing to open its doors through a "courtesy staff" to any reputable physician who might desire to treat

"Whereas, this procedure is antagonistic to the Massachusetts Law for workmen's compensation in so far as it deprives the injured workman of the right to select his own physician,

Be it resolved that the Massachusetts Medical Society, composed of four thousand and nine hundred Massachusetts physicians, acting through the Committee on Public Relations protests the application of the Federal Compensation Act to the Civil Works program in Massachusetts and

Be it further resolved that we respect fully urge that the man injured in Civil Works program has the right to select his own physician'

In answer to this, we have under date of January 15 the following reply

"FEDERAL CIVIL WORKS ADMINISTRATION,
1734 NEW YORK AVENUE, WASHINGTON

January 15, 1934

'Thank you for sending us copy of telegram from the Massachusetts Medical Society

The United States Employees Compensation Commission is administering the compensation provisions for Civil Works Administration employees. However, the Commission has informed our State Administrators that the bulletin on medical facilities which shows the physicians designated to treat injuries, is of long standing and was not issued for Civil Works purposes but for the treatment of Civil employees of the United States that for Civil Works purposes it was not intended to exclude other reputable physicians willing to give treatment at reasonable rates in accordance with Rules and Regulations No 5 and that local administrators are authorized to advise the local medical profession and organizations accordingly and to make arrangements to permit such physicians to participate in rendering this service on the basis indicated

Very truly yours

BRUCE MCCLURE, Secretary
Federal Civil Works Administration

However, we are informed by the President of the Massachusetts Medical Society that he is unable to find at the present time, January to June that any funds are available for the payment to physicians in civil practice who may have been called to attend such cases

The following recommendation was adopted by the Council at its meeting in February 1934 and is inserted here as a matter of record

The Committee recommends that it be authorized by the Council to represent the Society's interests in dealing with Federal Emergency Relief Administration Civil Works Administration and such other economic measures as may from time to time arise. We further recommend that a committee be established by each district society to act as liaison with local governmental officials and through the Public Relations Committee of the State Society with the State administration. This will establish machinery in Massachusetts in accordance with federal recommendations in Bulletin 7 F. E. R. A. and as is well exemplified by the New Jersey State and local societies (reported in the *A. M. A. Bulletin* for October)

Free exchange between local and state committees of information on policies and actions is highly desirable

VII

COSTS OF MEDICAL CARE

Since the publication of the report on the Costs of Medical Care, there has been so drastic a change in economic conditions that many of the factors upon which the Committee based its findings are not applicable today. Interest has been aroused both within and without the medical profession, however, and we recommend that doctors in their several communities forward a movement for the more efficient control of disability and disease. The problem will vary in the different parts of the State and probably in different cities and may be met in part by the following suggestions

1) Availability of hospital beds for the use of the practitioner not on the visiting staff of the hospital (Tends to education and better standing of the local practitioner with consequent better care of his patients) It is probable that in teaching hospitals there would be less possibility of this procedure than in institutions not primarily devoted to teaching

2) Group practice, e.g., Hanover, New Hampshire plan (May be varied according to local conditions)

3) Closer coöperation of the local and State Boards of Health with the medical profession. In any health measure the local doctors are as much interested as anyone, probably more so. This is also highly applicable to the State Board of Health tuberculosis program

4) Rigid scrutiny of the patient applying for free treatment at a hospital (The efficient care of the indigent sick in the communities obviates the menace of State Medicine) Statistics seem to indicate that from one to seven per cent abuse the privilege of hospitals for the care of indigent patients and it may be that because of our refinements in medical practice obtainable at the hospitals in contradistinction to general practice that this demand is made by both the poor and the well-to-do. Bearing on this are certain resolutions to be introduced on the floor by the Norfolk District Medical Society which we heartily endorse in principle and commend to the favorable consideration of every Councilor present.

5) Adequate representation of Doctors of Medicine on hospital boards. In no other profession is it apparent that their activities are so largely directed by extraneous even though perhaps sympathetic agencies

6) Entrance of the doctor into public life. With his educational and social background greater opportunities for the people he represents await his willingness to take this step. Medical practice is undergoing a process of evolution and if we can do so without entering upon a period of dangerous experimentation either upon ourselves or our patients it behooves us to meet changing conditions with changing methods learning what to avoid by the unfortunate English panel and German governmental systems and by contact with other sections of the Country inaugurate those principles proved to be acceptable and successful

In all of the above suggestions much might be said in elaboration of the ideas which we believe may be left to the imagination of those interested but more

of employment because of a finding of unfitness as hereinbefore provided and being in need of relief or assistance, has been a citizen of the Commonwealth on the effective date of this legislation or for one year prior to the date of such finding shall, on having received compensation for disability due to pulmonary disease in the full statutory amount, or at once if ineligible for such compensation, be entitled to assistance as provided for by Chapter 118A of the General Laws, as amended, irrespective of any provision thereof contrary hereto, for as long as such need and unfitness continue, and (n) that the official or body providing such assistance may at any time require that any such person be reexamined, as hereinbefore provided, in order to determine whether or not the unfitness continues

Section 13 Occupational Medical Staff

That legislation be enacted to provide that there be added to the personnel of the Division of Adult Hygiene of the Department of Public Health a medical staff and such assistants and facilities as may be necessary to the efficient performance of their duties, which shall be (a) to investigate and report to the Industrial Accident Board on the medical aspects of all cases coming before the board for compensation for silicosis, asbestosis or pulmonary tuberculosis and to so investigate and report in such cases coming before the board for other occupational diseases as the board may refer to them, their reports and findings to be admissible as evidence before the board or any member thereof, but no member or employee of the department to be subject to subpoena in connection therewith, (b) in any fatal case coming before them, to order an autopsy if in their opinion it is advisable for the purpose of determining a fact material to any party at interest, (c) to make such findings of physical fitness as are provided for in the preceding recommendations numbered five and six, (d) to study the effects upon health of materials and processes used in industry, in connection with which studies no member or employee of the department shall be subject to subpoena, and (e) in cooperation with the Department of Labor and Industries, to promote occupational health education.

The question was brought before the New England Roentgen Ray Society and the Tuberculosis Section of the Massachusetts Medical Society. The following resolution relative to the matter was passed by the New England Roentgen Ray Society

March 16, 1934

Be it resolved that the New England Roentgen Ray Society in meeting assembled by a unanimous vote strongly disapproves of Sections five, six and thirteen of the recommendations of the State Department of Public Health for legislation regarding the appointment of a special Industrial Disease Commission for the following reasons

1 That although yearly examinations of employees in industry may be desirable, it is not within the province of the Department of Public Health to spend funds for the protection of private injury

2 That the present provisions of the Workmen's Compensation Act for the employment of impartial physicians make such legislation unnecessary

3 That the proposed plan of placing the study of these cases in the hands of men inexperienced in roentgenology and equipped

with inadequate apparatus is unsound, especially when there are men of broad experience with adequate apparatus available

A committee appointed by the President of the Massachusetts Medical Society was unanimous in condemning the section of the Act designed to allow the establishment of this clinical board though wholly sympathetic with the ideas of preventive medicine incorporated in the bill. We hope that if further revision of the bill seems advisable, that adequate representatives of the Massachusetts Medical Society may be added to the board as originally appointed, believing that less drastic measures, educational to industry, may lead to the desired result.

We recommend that the Massachusetts Medical Society through its President actively concern itself in medical appointments and activities outside of legislative matters at the State House

IV A meeting was held in April of the Public Relations Subcommittee with two members of the Public Health Council and the Commissioner of Public Health which was largely devoted to a discussion of present and future policies of the State Department of Health. Insistent and cordial encouragement was given to the Commissioner to call upon the Massachusetts Medical Society through its President for discussion and cooperation of its program as it develops, dependent on the state of public health. We had been disturbed by newspaper reports and other sources of information of proposed enlargement of the State functions relating to the care of Chronic Heart Disease and Arthritis. We are definitely assured that the Department of Public Health does not wish for such added burdens and that the Cancer Control program was enacted by legislation contrary to its desires. We are deeply appreciative of the excellence of the work done under the direction of the State in its Cancer program but we believe that this should have been inaugurated by the Massachusetts Medical Society and future programs for the alleviation and care of chronic diseases should be initiated and controlled through agencies of the Massachusetts Medical Society.

We deprecate the attitude of certain interests that, without forwarding specific education of the medical profession in so far as the present understanding of the disease process permits, are already agitating for state hospitalization and care of individuals so afflicted with arthritis as to need medical attention. We urge the medical profession's organized opposition to any plan that would provide facilities for terminal hospitalization in such cases. Such a program presumes that medical knowledge is static and would enormously increase the burden of taxation both upon the public and the medical profession, which is concerned with the care of the sick.

V In the matter of Federal Compensation practices, the Public Relations Committee sent a telegram January 2, 1934 to the President of the United States, and other officers of the Government, as printed in the *New England Journal of Medicine* of January 11, 1934

'AN URGENT PROTEST ADOPTED AT A MEETING OF THE COMMITTEE ON PUBLIC RELATIONS HELD IN BOSTON, JANUARY 2 1934 Whereas the Civil Works Administrator of the United States Harry L. Hopkins, has instructed John J. Morris, Counsel for the Civil Works Administration of Massachusetts, to place all employees injured in the Civil Works program under the Federal Compensation Act and

TREATMENT OF HYDROCEPHALUS BY
ENDOSCOPIC COAGULATION OF THE CHOROID PLEXUS*

Description of a New Instrument and Preliminary Report of Results

BY TRACY J. PUTNAM, M.D.†

HYDROCEPHALUS of the communicating type has been so long recognized as a progressive and usually fatal disease that many attempts have been made to devise methods of relieving the condition by operation. The history of the subject has been ably reviewed by Davidoff¹ and we see from his paper that although many of the suggested operative procedures are extremely ingenious and occasional good results have been reported, none of them have become widely accepted. Dandy² as a result of considerable experience regards third ventriculotomy as the method of choice. The operation which has apparently yielded the best results at this hospital is that at first advocated, but later abandoned by Dandy², namely, removal of the choroid plexuses of both lateral ventricles by open operation. While no extensive statistics have been reported, some patients are still alive months after the operation, without progression of symptoms. Judging, however, from the experiences of neurological surgeons in this community (including my own) the operative mortality is high. Even when life is prolonged, the end results are apt to be disappointing, for the manipulation involved in emptying the ventricle and retracting its walls to expose the plexus almost inevitably leads to extensive cortical damage.

Believing that the principle of Dandy's operation is physiologically sound it occurred to me that it might be carried out by an endoscopic procedure. Dr. W. Jason Mixer showed many years ago that it is perfectly feasible to examine a hydrocephalic ventricle by means of an urethroscope³, and was kind enough to place his instrument at my disposal. But this, and all the other endoscopic devices ordinarily available proved to have certain disadvantages (such as focal length of lens system, inadequate field, bulk, etc.) which rendered them unsuitable for the purpose. Experience with microscopy of the choroid in animals⁴ showed that actual contact of the instrument with the plexus was essential for accurate vision in a cloudy medium. The necessities of a device to employ the coagulating currents of a modern diathermy generator made the use of a metal sheath disadvantageous.

Finally actual experience at the operating table dictated the shape and dimensions of the completed apparatus⁵.

The coagulating ventriculoscope (figs. 1 and 2) in its present state consists of a rod of optical glass with polished ends. The ventricular end is plane while the observer's end is ground with a slight curve of which the focal length is approximately equal to the length of the instrument. The rod bears a deep longitudinal groove in which lies a tiny bronchoscope light and its carrier. Two other smaller grooves carry the electrodes for diathermy, which are cemented to the glass and covered by an insulating enamel. The tips of the electrodes are bare, and are bent slightly toward each other so that they appear in the field of vision. The instrument is sterilized by immersion in alcohol, and is encased in a tube of rubber dam when in use. The ventriculoscope is made in two sizes, one ten centimeters long and six millimeters in diameter, the other eighteen centimeters long and seven millimeters in diameter.

The actual operation is carried out on one side at a time usually under avertin anesthesia. Ether should be avoided. A longitudinal incision is made through the scalp about three centimeters from the midline, in the parieto-occipital region. The bone is drilled and rongeured away over an area about four centimeters in diameter. The dura and then the pia are incised and clipped together to control bleeding and prevent collapse of the cortex. The handle of a scalpel is thrust through the white matter, and followed by the tip of the ventriculoscope. The room is then darkened and the operator puts on a sterile celluloid mask.

By careful maneuvering it is possible to follow the small veins on the walls of the ventricle down to the fossa in which the plexus lies. The plexus itself is a flocculent copper-red structure, floating free in the fluid. When the ventriculoscope is pressed against it and the coagulating current turned on sparks surround the electrodes and the tissue within the field turns white. Bit by bit most of the choroid in the body of the ventricle may be destroyed. In some instances there is a defect in the septum pellucidum, and the contralateral plexus may also be attacked.

Coagulation usually lasts five to twenty minutes. The patient often moans slightly when

From the Surgical Service of the Children's Hospital, Boston, and the Departments of Surgery and of Neurology, Harvard Medical School.

Read before the Boston Society of Neurology and Psychiatry May 17, 1934.

†Putnam—Professor of Neurology, Harvard Medical School. For record and address of author see "This Week's Issue" page 1394.

*I must acknowledge my indebtedness to Mr. Walter G. Wolfe of Pinkham and Smith Co., Boston, for his expert assistance with the optical system.

important than any one of them is the basic idea of inducing closer coöperation and contacts of neighboring practitioners. No one can do that for them and if they are unwilling to take so short a step, then we may expect them to wander farther in the wilderness.

In all of our work we should be concerned with the preservation of the precious traditions that have been ours through many previous decades and in the evolution and advance of the practice of medicine be solicitous that doctors should take the lead.

The Costs of Medical Care has had the earnest consideration of doctors philanthropic and economic agencies throughout the Commonwealth and we are inclined to urge that the community interests should solve the individual questions, thus achieving better personal results from the viewpoint of the patient and the doctor. Cities and towns are slow to believe that money spent for health and sanitation is either necessary or economically sound and we advise that doctors in their several communities become active participants in this campaign of education. Thus practitioners cooperating with each other and with local boards of health may attain results for the residents of a community through already existent facilities, or by such additions of personnel or buildings as may be determined to be necessary after sufficient study has been made to insure adequate solution of the problems presented. This means at least local public interest on the part of the medical profession in each city and town, and with one or more doctors willing to undertake this responsibility, we believe that the greatest service for the public and the medical profession would follow. The public health officer should be encouraged to call upon the local physicians for suggestions and coöperation, as poor sanitation and inefficient control of communicable disease mean 'poor medicine' and the public should be taught and is willing to look to the medical profession for its welfare under all conditions.

WILLIAM H. ROBEX, *Chairman*,
Committee on Public Relations,

ELMER S. BAONALL,
J. HARPER BLAISDELL,
WILLIAM G. CURTIS,
FRED R. DAME,
FRANCIS H. DUNBAR,
HARRY W. GOODALL,
ERNEST L. HUNT,
WALTER A. LANE,
WILLIAM F. MACKNIGHT,
THOMAS H. MCCARTHY,
RICHARD A. MCGILLICUDDY,
CHARLES E. MORGAN,
*FRANCIS E. O'BRIEN,
P. J. SULLIVAN,
MICHAEL A. TIOHE,
JOHN I. B. VAIL,
HARPER E. WHITAKER.

*Not present when report was adopted

APPENDIX NO. 9

OFFICIAL COPY OF ACCEPTED RESOLUTIONS OF THE
RESOLUTIONS COMMITTEE OF THE NORFOLK DISTRICT
MEDICAL SOCIETY

Whereas free and nearly free treatment privileges in municipal and endowed charitable hospitals are

designed primarily for the indigent and when properly managed meet with the approval, coöperation and support of the medical profession, and

Whereas the growing extension, in each institution, of this care and treatment to the non-indigent results in a lessened efficiency and a comparative neglect of the deserving people for whom these privileges are established, and

Whereas this recognized abuse of such medical charity often results in unwitting and unfair competition with the private physician by these supposedly charitable institutions, therefore

Be it resolved that

1 The Norfolk District Medical Society through its Councilors urge upon the Massachusetts Medical Society the need for immediate corrective action to speedily bring relief from the aforesaid existent conditions through appropriate legislation and all other necessary measures.

2 The Norfolk District Medical Society through its proper officers and committees bring the matter at once to the attention of His Honor, the Mayor of the City of Boston and to the proper authorities of the various charitable hospitals in Greater Boston, urging that these cited abuses and impositions be discontinued and that every effort be made to correct and eradicate them.

3 There be established in Boston by the municipality or by the coöperation of private agencies representative of the charitable hospitals, or both, a duly accredited agency or clearing house which shall investigate the financial status of all applicants for medical charity, in any and all branches and which shall be empowered to issue suitable and certified credentials to those found worthy of gratuitous treatment.

4 Pending the establishment of this proposed agency or clearing house, each institution in question be urged to make every effort to expedite the correction of these existing abuses by the signed statement of each applicant in affirmation of the necessity for gratuitous treatment, further, to display in such a manner as to be easily read by all applicants for charitable aid, in any and all branches, a suitable sign indicating clearly that the institution, or at least that particular department, is for charity patients only and is not open to those financially able to pay a fee to a physician, and finally, should it be learned at any time that this entrance requirement has been ignored by any applicant, a penalty of the immediate termination of treatment shall be exacted.

5 Copies of this resolution be placed in the hands of neighboring district societies with the request that such societies join with the Norfolk District Medical Society in this movement to correct and eradicate the aforesaid abuses of medical charity.

Signed

FREDERICK L. HAYES *Chairman*,
MAURICE GERSTEIN,
DAVID L. HALBERSLEBEN

April 18, 1934

sure that the condition is arrested. The sixth child, an intelligent girl of fifteen months had a head which measured seventy-three centimeters before the second operation, and sixty-seven centimeters three weeks later. At present, seven weeks from operation, there appears to be an obstruction of the aqueduct doubtless from a

SUMMARY

1 A new endoscopic instrument is presented with which it is possible to destroy the choroid plexuses within the lateral ventricles by means of electrical coagulation without removal of spinal fluid.

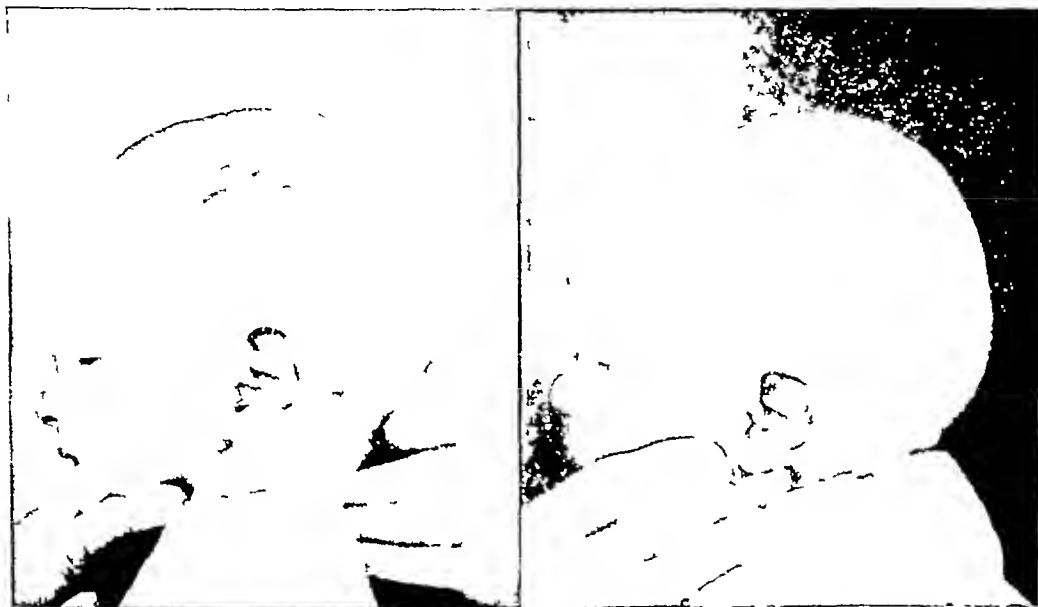


FIG. 3. P. W. aged four weeks at time of first operation (left) and two months later (right) to show collapse of the fontanelle following coagulation of the choroids.

clot, which will probably require further attention.

It is difficult to judge accurately of an infant's mental capacity, but at least four of the patients in the present series appeared normally active and bright. Two of those with the largest heads appeared alert and intelligent. The procedure had no apparent effect on mentality in any of the cases. Two patients had a few convulsions in the first two weeks postoperative. No other abnormal neurological manifestations ascribable to the operation have been made out.

Considering the otherwise almost hopeless outlook for the disease, the immediate results appear encouraging. It remains, of course, to be seen what the final outcome will be, but it seems reasonable to suppose that it should be at least as good as that of the cases in which the choroid has been removed by open operation, in some of which it appears that permanent relief has been obtained.

2 The procedure has been used in seven cases of communicating hydrocephalus in infants and one of meningocele without hydrocephalus with encouraging results so far. Bulging of the fontanelles has been relieved and the diameter of the head has been decreased in all cases except one.

3 There have been two deaths in the series, both due to intercurrent diseases and possibly not to be attributed to the operation. The intracranial pressure was relieved up to the time of death in these cases also.

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See next page for further illustrations

the current is turned on. The instrument is finally withdrawn, and the wound carefully sutured. The reaction to the operation is slight, and directly proportional to the amount of hemorrhage. Often the infant will be able to take its feedings the same afternoon. In some in-

Two of the children in the series have died, but it seems fair to question whether either death should be ascribed to the operation. The first case was that of a mentally retarded girl of four months, whose head had grown to the size of thirty-one centimeters following an oper-

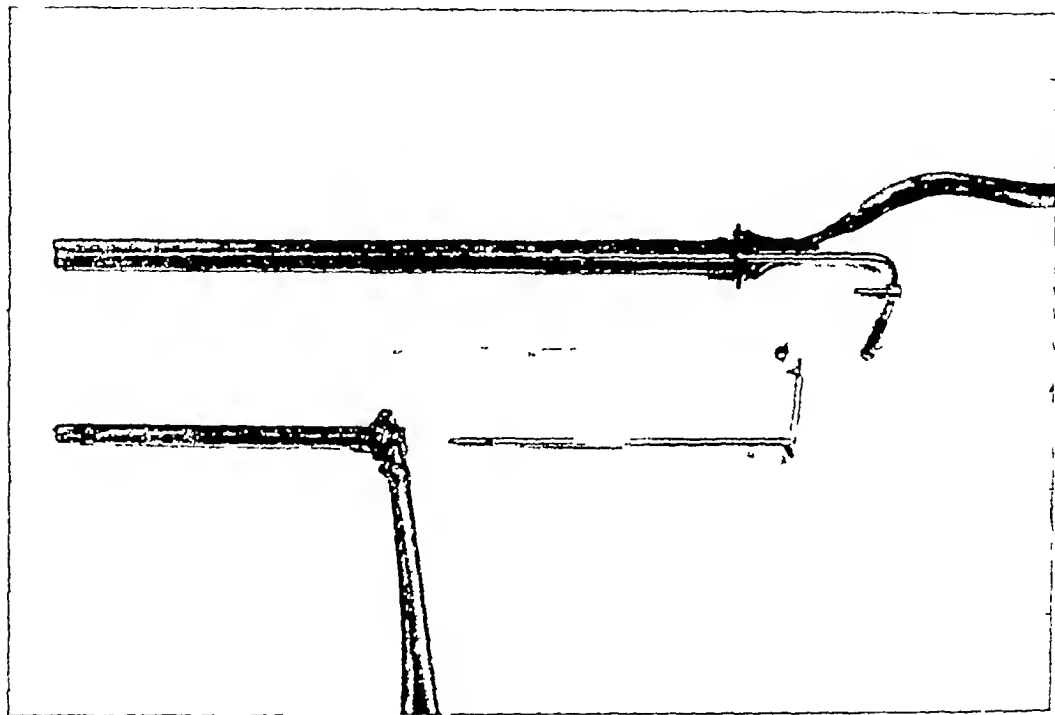


FIG 1 The two models of the coagulating ventriculoscope. The larger model is shown assembled with light carrier in place. The lamp and carrier are shown separated from the smaller model. The heavy wires attached to the observer's end of both instruments are for the coagulating current.

stances, there has been no perceptible change in the clinical chart to mark the day of operation.

Endoscopy with coagulation has been carried out twelve times in seven unselected cases of hydrocephalus—all those brought to the Sur-



FIG 2 Enlarged view of the ventricular end of the larger instrument to show the electrodes.

gical Service for treatment within the last five months. The infants varied in age from one to eighteen months at time of operation. In most of the cases, hydrocephalus had come on following operations for meningocele. In an additional case the choroid was coagulated to relieve the pressure within a meningocele although the head was not enlarged at the time, and the results appear to justify the step

ation for meningocele. The choroid was coagulated on the right, and a week later on the left. The child was doing satisfactorily after the second operation and the head had decreased to a diameter of twenty-nine centimeters, when the family became uncooperative and insisted on taking her home. She died of a respiratory infection about a week later.

The second fatal case was that of an apparently bright male infant of about a month, whose head measured forty-five centimeters in diameter, and was growing progressively. The fontanelle was tense. Coagulation of the choroid was carried out on one side with little immediate reaction, and the baby did well for two days, but then developed diarrhea and died a week after operation.

Of the six remaining patients three who have survived the operation for seventeen (fig 3), five and four weeks respectively, appear to be definitely relieved at present. Their heads have remained stationary or decreased in size, and the fontanelles have become sunken. The pressure has been definitely decreased in two other cases still in the hospital, but it is too early to be

such a case. For this reason the records have been analyzed of twenty-nine cases of pancreatic necrosis, twenty-two cases of chronic pancreatitis, and twenty-four cases of focal fat necrosis of the pancreas which have been observed in the Pathological Laboratory of the Boston City Hospital, in order to gather more information regarding the factors associated with these conditions. Especial attention has been directed to the occurrence of these conditions in association with acute and chronic alcoholism.

TABLE 1
CONDITIONS ASSOCIATED WITH ACUTE AND CHRONIC LESIONS OF THE PANCREAS

	Acute Pan- creatic Necrosis	Chronic Pan- creatitis	Focal Fat Necro- sis
<i>Cirrhosis of Liver</i>	2	5	7
<i>Fatty Liver</i>	4	1	1
<i>Acute and Chronic Alcoholism</i>	6	1	1
<i>Obstruction or Infection of Bile Ducts</i>	5	5	5
<i>Cholelithiasis</i>	5	2	3
<i>Carcinoma of Common Duct</i>	0	2	1
<i>Empyema of Gall Bladder</i>	0	1	1
<i>Miscellaneous</i>	13	10	10
Cause Obscure	9	8	3
(? Alcoholism 3)			
<i>Pregnancy</i>	1	—	—
<i>Extension Ulcer of Stomach and Duodenum</i>	2	—	1
<i>Tuberculosis</i>	—	—	2
<i>Diabetic Coma</i>	—	—	1
<i>Cardiac Insufficiency with Congestion</i>	1	2	3

The results of the study of these records are summarized in table 1. The distribution of the associated conditions was similar in all three groups, that is to say, these pancreatic lesions were found to occur in patients with alcoholism or diseases commonly associated with chronic alcoholism in approximately one-third of the cases. Indeed, of the nine cases of pancreatic necrosis in which the cause was obscure, it is probable that three additional cases were associated with alcoholism. Of the cases of chronic pancreatitis, in which the predisposing factors were undetermined, a few were associated with obesity or arteriosclerosis. In some of the history concerning drinking habits was inadequate so that it is impossible to say whether any of these cases might have resulted from alcoholism.

Abstracts of the records of the six cases of pancreatic necrosis following alcoholism are briefly given.

REPORT OF CASES

CASE 1 A young man thirty years of age was admitted to the hospital complaining of abdominal pain and vomiting of one week's duration. For about fourteen months prior to admission he had been drinking very heavily, and frequently drank as much as a quart of alkyl spirits a day. Twelve months before entry he had an attack of nausea and vomiting which lasted for six days. On numerous occasions following an alcoholic spree he would have intermittent abdominal pain and vomiting.

Six days before admission to the hospital following a bout of drinking he was seized with severe epigastric pain and vomiting. The pain was constant and accompanied by four or five attacks of vomiting a day and obstipation. He had felt hot and flushed and had been in bed for three days before admission.

Upon examination the patient appeared acutely ill. He was mentally clear and alert and complained only of abdominal pain. The temperature was 104°F, the pulse rate 160 per minute and the respirations were 26 per minute. The face and extremities were cyanotic with a yellowish tinge. The heart rate was rapid but the sounds were clear. The lungs showed nothing abnormal. The abdomen was distended but everywhere tympanic without evidence of free fluid. There was tenderness and some rigidity of the abdomen above the umbilicus and some pain and tenderness in the left flank. A friction rub was heard over the liver below the rib margin on the right side and normal peristaltic sounds could be heard with the stethoscope.

The white blood count was 15,100 per cubic millimeter with 87 per cent polymorphonuclear cells. The icteric index was 100 units and the non-protein nitrogen of the blood was 40 mg per cent.

A laparotomy was decided upon and a typical hemorrhagic pancreatitis was found. There was no evidence of obstruction in the bile ducts. The capsule of the pancreas was drained. The patient died one hour after the operation. There was no autopsy.

CASE 2 A white man aged forty-three years who had drunk alcohol to excess was admitted to the hospital on account of abdominal pain, fever and jaundice. He had had two similar attacks during the past two years. The onset of the illness had been abrupt with abdominal pain, nausea and vomiting. Upon examination there was icterus, tenderness in the epigastrium and a palpable mass beneath the liver. The temperature varied from 100°F to 102°F and the jaundice persisted. Three weeks after the onset the patient was operated upon; an abscess under the liver was incised and drained. The pus contained *B. coli*. Following the drainage of the abscess the edges of the wound showed evidences of digestion. The patient failed gradually and died one month after the onset of the acute symptoms.

Anatomical Diagnosis Suppurative pancreatitis. Localized peritonitis. Retroperitoneal abscesses about the tail of the pancreas. Thrombosis of splenic artery. Infarcts of spleen. Jaundice. Obesity. No evidence of cholelithiasis.

CASE 3 A white woman twenty-seven years of age drank daily large quantities of whiskey for three weeks prior to admission. This was followed by severe nausea and vomiting of several days' duration, then there appeared severe pain in the abdomen especially over the left hypochondrium. The size of the abdomen was increased. Examination revealed an obese woman with rapid thready pulse, cold clammy skin, no elevation in temperature and a large firm tumor filling the whole left side of the abdomen. There was tenderness over the tumor. At

These illustrations complete the article on "Treatment of Hydrocephalus" by Dr Putnam



FIG 4 A. M. fifteen months old, who developed hydrocephalus following operation for meningocele Before coagulation of choroids.

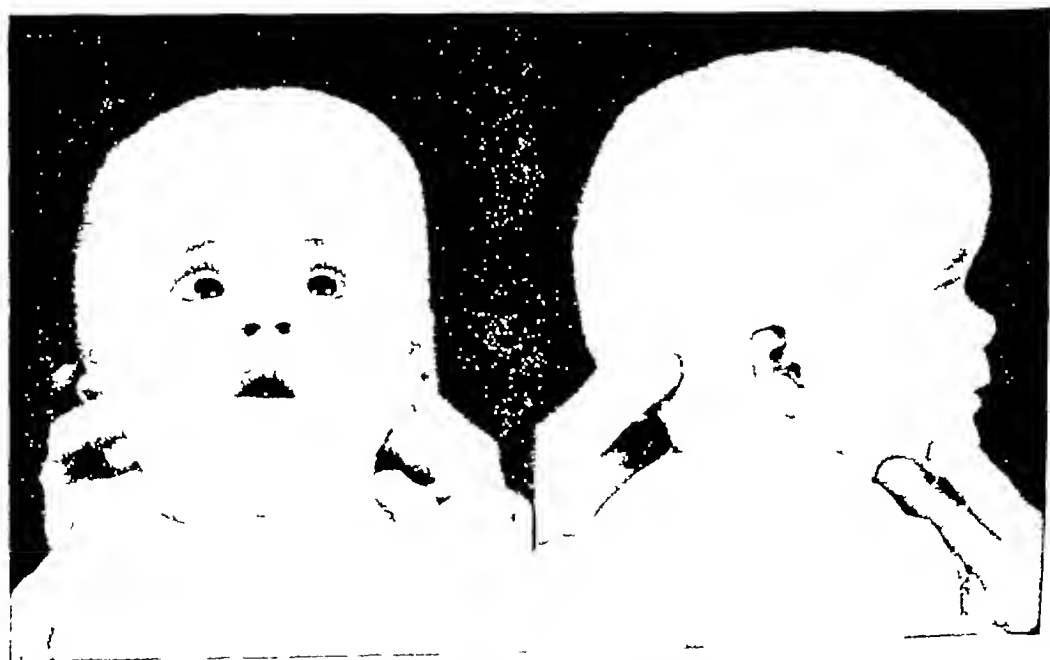


FIG 5 A. M. four weeks after coagulation of both choroids through a single incision Notice depression of fontanelle

ACUTE PANCREATIC NECROSIS IN ACUTE AND CHRONIC ALCOHOLISM*

BY WALTER K MYERS, M.D.,† AND CHESTER S KEEFER, M.D.†

EVERYONE who has had an opportunity to study a group of cases of acute pancreatic

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For records and addresses of authors see "This Week's Issue" page 1374

necrosis has commented upon the fact that alcoholism is a predisposing factor. A few clinicians have observed cases of pancreatic necrosis following bouts of acute alcoholism, but its occurrence under these circumstances is not generally appreciated. We have recently observed

dominal pressure, as occurs with vomiting and retching. Others have reported cases of pancreatic necrosis following vomiting and retching as a result of general ether anesthesia.^{7, 8} It is possible that the development of acute pancreatic necrosis following vomiting will depend to some extent upon the exact anatomical relationship of the opening of the pancreatic ducts into the duodenum. That is, pancreatic necrosis may follow vomiting and retching if the pancreatic ducts open directly into the duodenum. These questions must remain unanswered for the present.

THE DIAGNOSIS OF PANCREATIC NECROSIS

The diagnosis of pancreatic necrosis is made from an appreciation of the predisposing factors, a knowledge of the clinical features, the

conditions in which pancreatic necrosis may occur. Some are rare. In others the pancreatic process is but a part of the primary condition. However, a full appreciation of the etiologic or predisposing factors is essential in arriving at a correct diagnosis.

Attempts are made to divide acute pancreatitis into various types: hemorrhagic, gangrenous, and suppurative. From a study of any group of cases it seems apparent that in each one there is essentially the same process. Such a classification seems to be no more than a fine differentiation of the degree of involvement and the stage of the disease. The term *pancreatic necrosis* would seem to be more satisfactory. The clinical picture may be divided into (1) the acute process, and (2) the complications arising from the necrosis.

The onset of pancreatic necrosis is characteristically sudden following a large meal, an alcoholic bout or previous attacks of biliary colic, or without warning. Severe pain is the outstanding feature. It is located in the epigastrium, in the left hypochondrium, in the back or in both loins. The pain is soon followed by the symptoms of collapse, the pulse is rapid and of poor quality, the blood pressure falls, the temperature may be low and cyanosis due to collapse may be a striking feature. In other words, there are the symptoms commonly associated with a large hemorrhage together with the agony of a visceral rupture. Vomiting is almost always present early and is repeated, frequent and severe. The respirations may be rapid and shallow.

Upon examination of the abdomen, distention of the epigastrium, with tenderness extending into the back especially on the left side, are prominent features. Rigidity is not usually so striking as in the rupture of gastric or duodenal ulcer. The distention may be so prominent that intestinal obstruction is suggested.

If the patient survives the acute attack, there may be improvement in from three to seven days. Then the temperature rises and the signs of a localized abscess may appear. Vomiting may increase or recommence. The epigastrium may remain full and tender. The symptoms are present of an abscess pointing into the loin, in the subdiaphragmatic region, in the epigastrium or extending into the retroperitoneal tissues and appearing in the scrotum. There may be the symptoms of hemorrhage into the gastrointestinal tract or into the retroperitoneum. The complications recorded in the thirty cases studied, together with those which may occur as indicated by the literature, are listed in table 3.

From table 3 it is seen that the complications are due to fat necrosis resulting from digestion of tissue or hemorrhage following the erosion of a blood vessel. Due to the anatomical posi-

TABLE 2

ETIOLOGY OF ACUTE PANCREATIC NECROSIS

- I. *Obstruction or Infection of the Biliary Passages*
 1. Stones in Bile Ducts
 2. Infections of Bile Ducts
 3. Tumors of Bile Ducts
 4. Duodenal Diverticula
 5. Parasites—*Ascaris Lumbricoides*
- II. *Acute or Chronic Alcoholism*
 1. Fatty or Cirrhotic Liver
 2. Following Vomiting and Retching
- III. *Extension of Infections to Pancreas*
 1. Perforated Gastric Ulcer
 2. Empyema of Gall Bladder
 3. Perinephric Abscess
- IV. *Trauma—Surgical*
 1. Nephrectomy
 2. Cholecystectomy with Common Duct Drainage
 3. Splenectomy
 4. Resection of Stomach or Duodenum
 5. Retrograde Embolism of Omental Veins
- V. *Circulatory Disturbances—Local and General*
 1. Local
 - (a) Embolism of Pancreatic Artery
 - (b) Retrograde Embolism from Omental Veins
 - (c) Postoperative Thrombosis of Intrapaneateic Veins
 2. General
 - (a) Cardiac Insufficiency with Congestion
- VI. *Acute Infections*
 1. Epidemic Parotitis
 2. Typhoid Fever
- VII. *Miscellaneous Conditions*
 1. Poisons—Lysol—Oxalic Acid
 2. Food Poisoning
 3. Following Anesthesia

recognition of the complications, and the consideration of the diseases with which it may be confused.

In table 2 have been included a great many

operation, this mass was covered with omentum and extended from the brim of the pelvis upward behind the stomach where it was adherent to the posterior wall, it contained serosanguineous fluid which was evacuated. Drains were inserted. After operation the patient developed the signs of fluid in the left pleural cavity and died six days later.

Anatomical Diagnoses Pancreatitis with cyst formation. Acute fibrinous peritonitis. Pleurisy with effusion (left). Early serofibrinous pericarditis.

CASE 4 A white man, thirty-three years of age, acknowledged excessive drinking for a period of ten years. Recently he had taken little food and had developed the symptoms and signs of multiple neuritis with pains in the arms and legs. For several days before admission he had had persistent nausea and vomiting without abdominal pain. Upon examination there were the signs of peripheral neuritis, and marked oral sepsis. The abdomen was soft and no masses or tenderness were made out. He continued to vomit for three days but there was no essential change in his general condition until the day of his death. Suddenly he complained of extreme weakness and developed the signs of collapse with a tachycardia, cold extremities, sweating and dusky cyanosis. Death followed shortly after the appearance of these symptoms.

Anatomical Diagnoses Pancreatic necrosis with peripancreatic perinephric and retroperitoneal hemorrhage on the left side. Fatty liver.

CASE 5 A woman aged forty-two years who had drunk four to five glasses of beer and about one pint of whiskey a day for several years was admitted to the hospital. For one month before admission she had been drinking more than usual. Three days prior to entry she began to vomit almost constantly and the abdomen became distended and tender. Upon examination she was found to be prostrated, the temperature was 100°F, the pulse rate was 100 per minute and the heart sounds were distant. The abdomen was distended, and there was tenderness in the epigastrium. The white blood count was 14,000 per cubic millimeter. For five days she remained in about the same condition with the temperature varying from 98°F to 101°F. She then failed rapidly and died.

Anatomical Diagnoses Cirrhosis of the liver with fatty changes. Sclerosis of the pancreas with multiple areas of acute fat necrosis. Edema of the brain.

CASE 6 A young man aged thirty years had been drinking to excess for three months. Ten days before entry he was seized with severe abdominal pain, vomiting and pain in the back. He was restless and delirious. The abdomen was distended and there was tenderness across the epigastrium with extreme pain upon pressure. The temperature was 99°F. The leucocyte count was 24,000 per cubic millimeter. At operation the omentum was found to be thickened and contained many areas of fat necrosis. The pancreas was enlarged and indurated. The gall bladder was distended but appeared normal. Death occurred six hours after admission.

Anatomical Diagnoses Acute hemorrhagic pancreatitis with fat necrosis. Fatty liver.

From these cases, there is no doubt that acute pancreatic necrosis is occasionally seen following acute alcoholism when there are no other demonstrable factors to account for it.

Similar instances of acute pancreatic necrosis following acute alcoholism have been noted by McWhorter¹, Scheel², Mondon³, and Émile and André⁴.

Mondon reported a case of a young man who was admitted to the hospital with alcoholism, vomiting and tachycardia. The necropsy showed a hemorrhagic pancreatitis with hemorrhagic infiltration of the stomach, duodenum and upper jejunum, and thrombosis of the terminal branches of the superior mesenteric vein and the coronary veins of the stomach. The interpretation of the sequence of events in this case was not clear. Of the cases described by Émile and André all five were diagnosed cardiac insufficiency. Three were admitted with the diagnosis of acute alcoholism, one with the diagnosis of chronic alcoholism, and in the fifth the history was obscure. Necropsy showed that death resulted from pancreatic necrosis.

Aside from the cases of acute pancreatic necrosis following acute and chronic alcoholism, chronic lesions in the pancreas are not uncommon in patients who have used large quantities of alcohol during life. Gross and Guleke⁵ discuss at length the rôle of chronic alcoholism as a cause of pancreatitis, especially the chronic forms of the disorder. They are of the opinion from their own experiences and from a study of the literature that patients with chronic alcoholism commonly show anatomical alterations in the pancreas. These lesions are described as an increase in the intra- and inter-lobular fibrous tissue. We were able to confirm this opinion.

Not uncommonly, in patients who eventually show the lesions of chronic pancreatitis, there is a history of previous attacks of upper abdominal pain. These attacks of pain, if any diagnosis was made, may have been called acute gastritis. On the contrary, in the cases in which fat necroses are found, the symptoms during life may not lead to a suspicion of pancreatic disease.

The mechanism whereby pancreatic necrosis follows alcoholism is not evident. Three possibilities are suggested: the effect of alcohol on the pancreas as it is carried to it by the blood stream, obstruction or infection of the pancreatic ducts due to duodenal congestion following acute alcoholism and the forcing of duodenal contents or bile into the pancreatic ducts as a result of persistent vomiting.

Objections to all three of these possibilities may be raised. It is probable that no one cause will be found. Chronic changes do occur in the pancreas in the absence of duodenal congestion or infection. If it is admitted that alcohol plays a rôle in the production of changes in the liver, it would be difficult to deny the possibility of similar processes taking place in the pancreas. The question of the regurgitation of duodenal contents into the pancreatic ducts during the act of vomiting is one which has excited controversies. Some physicians⁶ doubt that it is possible to force duodenal contents into the pancreatic ducts by increased intra-ab-

short time, so that its use externally is not advised, however, there still crops up a sporadic case where some person has used an arsenic paste on a cancerous lesion

Fowler's Solution, i.e., potassium arsenitis, is a drug which accumulates in the system and is bound to show itself in various pathologic forms later in life. This preparation was given publicity in the latter part of the Eighteenth Century by an English physician, Dr T Fowler, who called it "Liquor Mineralis" to deceive the patients regarding the presence of arsenic, he also reported that urticaria resulted from its use. According to "Remington's Practice of Pharmacy," the formula is as follows

Arsenic Trioxide	10 Gm
Potassium Bicarbonate	20 Gm
Compound Tincture of Lavender	30 cc
Distilled Water	qs 1000 cc

REPORT OF CASE

Mrs I. F. aged sixty-one, was first seen November 11, 1930 referred by Dr Joseph Lynch. She complained of itching and blotching of the skin.

Present Illness The patient stated that for the past seven years she suffered from marked itching of the skin which sometimes broke out into large marks like hives, and at other times left big ridges. This itching was so marked that it kept her awake at night and made her very nervous.

Past History She stated that twenty-eight years ago she had epileptic attacks for which she was treated by a local M.D. who gave her a medicine which she took continuously until five years ago. It cured her of her epileptic attacks but she was so afraid of their recurrence that she continued to take the medicine.

Physical Examination Showed marked eruption on body and extremities, the skin showed various sized lesions consisting of papules, vesicles, wheals of various sizes, numerous excoriations, and several areas of brownish pigmentation. Examination of the palms and soles showed a different type of eruption here the skin was very dry, and there were more or less symmetrically distributed definite hard, keratotic papules surmounted on a skin which was markedly thickened. General physical examination was negative except blood pressure which was 192/86. Briefly, this patient showed

typical arsenical dermatitis with keratoses, wheals, papules, excoriated vesicles, and pigmentation.

A copy of the prescription which she took for twenty-three years was secured and was found to be as follows

Pot Bromidi	dr 8
Tinct Nux Vomica	dr 4
Liq Pot Arsenitis	dr 2
Aquae	oz 1
Elix Gentian & Tr Ferr Chloridi	oz 6

This woman had taken over three drops of Fowler's Solution three times a day. She was given various treatments including the use of calcium gluconate and sodium thiosulphate and local applications which gave her some relief from the itching but no improvement of the keratotic lesions, itching was kept more or less under control until her last visit on February 13 1931. On April 30, 1931, she was seen by Dr Lynch and at that time, she complained of nausea (one week's duration) her left eye was blurry and she noticed a yellow appearance of her eyes and skin. Five days later she started vomiting this continued until she was sent to the hospital for further observation. At the hospital x-ray was employed but showed no definite pathology. The patient was operated upon March 22, with diagnosis of carcinoma at the head of the pancreas and the question of acute hepatitis. Under spinal anesthesia and with the usual abdominal preparations a high right paramedian incision was made. The abdomen was opened the liver was found to be reduced to two-thirds its normal size, and its surface was roughly granular. The gall bladder was not distended and emptied readily. There was no evidence of stones or of common duct obstruction. It was felt that nothing further was indicated from a surgical standpoint and the abdomen was closed in layers. The patient died eight days after operation.

Laboratory Findings Wassermann—Negative
Trace of bile in urine

The above case, as regards the skin, showed a typical eruption due to the ingestion of arsenic, and it was the opinion of the internist and surgeon that the liver changes were also due to arsenic. Whether the arsenic was of value in the original condition it is hard to state, but the continued use of this dangerous prescription could have been prevented by simply adding the words "non-repeat"

MALPRACTICE SUITS, THEIR CAUSE AND PREVENTION

BY HALBERT G STETSON, M.D.,* AND JOHN E MORAN, M.D.*

AN analysis of the causes of malpractice suits has been made and the following facts present a summation of information obtained from various liability corporations and physicians

Approximately twenty thousand suits have been brought against physicians in the United States in the past five years, nearly one thousand of which have occurred in Massachusetts. There are approximately 350 cases awaiting disposition in this state at the present time†

The causes of these suits, as determined from an analysis of 35,000 cases, are as follows

- 1 Inopportune remarks by subsequent attending physicians
- 2 Personal enmity and jealousy between members of the profession
- 3 Countersuits interposed as a defense against the suit brought by a doctor for the purpose of collecting his fee
- 4 Failure to use the x-ray in the diagnosis of, and reduction of, fractures
- 5 Outside causes, e.g., newspaper articles, so called "scientific cults," etc
- 6 Negligence of the nurse employed by a physician.
- 7 Rarely alcoholism

†Presented for publication January 27 1934

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tion of the pancreas, most of the areas of necrosis or the hemorrhages are retroperitoneal and on the left side. If a blood vessel is not opened by digestion, it may become thrombosed. Symptoms resulting from this process will depend upon the vessel occluded.

The conditions that simulate pancreatic necrosis are the following: (1) perforated gastric or duodenal ulcer, (2) biliary colic or acute chole-

as well as the similarity of the symptoms. When confronted with an acute upper abdominal condition, it is necessary to consider pancreatic necrosis in addition to the more common conditions.

SUMMARY AND CONCLUSIONS

1. Acute pancreatic necrosis may occur following an acute bout of alcoholism, especially if there is prolonged nausea, vomiting and retching.

2. Pancreatic necrosis and chronic pancreatitis are found in conditions commonly associated with alcoholism, such as cirrhosis and fatty infiltration of the liver.

3. The various circumstances under which pancreatic necrosis occurs are presented together with the diagnostic features and complications as recorded in thirty cases.

4. Attention is called to the conditions in which mild attacks of pancreatitis may be observed.

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TABLE 3

COMPLICATIONS OF PANCREATIC NECROSIS

1. Author's Series

- | | | |
|----|---|---|
| 1 | Empyema of Pleural Cavity—Left Sided | 2 |
| 2 | Lung Abscess—Left Sided | 1 |
| 3 | Abscess in Lesser Peritoneal Sac | 2 |
| 4 | Retroperitoneal Abscess about Left Kidney | 3 |
| 5 | Subphrenic Abscess | 3 |
| 6 | Abscess in Omentum | 1 |
| 7 | Thrombosis of Splenic Artery | 1 |
| 8 | Hematemesis—Perforation of Stomach | 1 |
| 9 | Pericarditis | 1 |
| 10 | Retroperitoneal Hemorrhage | 1 |

2. Other Complications

- Perforation of Abscess—Duodenum Transverse Colon, Common Bile Duct
- Hemorrhage—from Intestine Intraoperative from Perforation of Arteries or Veins—Splenic, Pancreatic or Duodenal
- Thrombosis—of Portal, Splenic, Mesenteric or Left Renal Vein

cystitis, and (3) intestinal obstruction. Indeed, one of these diagnoses is usually made when pancreatic necrosis is later found to exist. This is, in no small measure, due to their frequency,

ARSENIC POISONING

BY JOHN G. DOWNING, M.D.*

JANUARY 6, 1934, three detail men left samples of so called tonics at my office, each containing arsenic, one label announcing arsenous acid gr 1/40 (16 mg.) to the dose, to be taken three or four times daily.

Shortly after their departure, a girl presented herself for the treatment of acne. She stated that she had been treated by her family doctor for the past year. At the beginning of the year he prescribed liquor potassium arsenitis in five-drop doses three times a day, and as she had had no relief after faithful ingestion of the above medicine for the full year, she decided to try another physician. At intervals during the year she inquired as to the feasibility of continuing the arsenic but was assured of its value. Lately she noticed that she was feeling quite depressed and languid. Later, upon examining various bottles and packages of pills in the sam-

ple closet, it was a revelation to find how many contained arsenic in some form. As a result I determined to report the following case as an example of the result of the injudicious use of arsenic. This routine giving of arsenic for so called "alterative," "tonic," "roborant," "blood builder" purposes is irrational and harmful.

Arsenic, for many years, was proclaimed the most useful drug in the treatment of skin diseases and has been employed in a large variety of morbid conditions of the skin, it is a useful though much overrated drug and most dermatologists are exceedingly careful in prescribing it. It certainly has a profound influence on the skin for it can produce any form of eruptive disturbance. The cutaneous eruptions from the external and internal use of the drug are similar in character. The irritant effect of external applications has been known since antiquity and cases are on record where arsenical lotions, plasters, and pastes have proved fatal in a very

*Downing—Assistant Professor in Dermatology Tufts Medical School. For record and address of author see This Week's Issue page 1394.

"Absence of x-rays	
Diagnosis missed	56
Some complication overlooked	18
Malunion not recognized	12
Allegation by hostile practitioner could not be refuted	4
	90
Hostile action based on adverse criticism by another practitioner	10"

He also says, "Unfortunately the practitioner who carries out this treatment is often not content with having secured the patient, but allows himself to express some hostile criticism or at any rate assents to an opinion expressed by the patient, hostile to the first doctor. This opinion then actually forms the basis of the action for negligence. This factor of one medical man criticizing or condemning another is in reality very much more important than the figure of 10 per cent would indicate. The great majority of all the other 90 per cent of the cases, although they may turn upon the neglect of x-rays, are nevertheless supported by the criticism of one medical man about the conduct of another."

These suits form a very important problem. A recent speaker before the Franklin District Medical Society emphasized the caution that must be observed in caring for fractures. He stated that nearly 90 cases of fractures were pending disposition in malpractice suits in Boston at that time.

In view of the above analysis of 35,000 or 40,000 cases it might be well for members of the profession to remember the statement of Rip Van Winkle, made after one of Dame Van Winkle's outbursts of temper, "A tart temper never mellows with age, and a sharp tongue is the only edged tool that grows keener with constant use." The Greek philosopher, Xanthus, said, "The tongue is the best and worst in man, the best if used all right, the worse if used awry." If these two thoughts are kept in mind we are sure that malpractice suits will show a decided drop. The suggestions of Locke should be always kept in mind: "Please don't criticize—particularly to the patient—the treatment given by some other doctor before the patient came to you. You see the result—nothing more. You do not know the whole story. You do not know what the original condition was, what the other man encountered in the way of difficulties, or whether he had proper cooperation from the patient. Wait 'until the evidence is all in.' You may change your mind when you get all the facts. You may be wiser. But at least, you will know what you are talking about."

Adequate records and greatly in proper disposition of these cases. To quote Cannon: "To eliminate many of these dangers, I caution you as follows:

(1) Relative to your records. From day to day it must become more evident to the practicing physician and surgeon that his only safe-

ty against malpractice suits, even though he be guilty of no negligence, lies in keeping an accurate record of his treatment of the patient, not only a correct record in the hospital, but a correct office record of all that transpires outside of the hospital, and not only should he keep a correct record, but he should keep an accurate and detailed record, both in the hospital and out."

Copies of prescriptions should be kept, frequent roentgenograms should be taken, if an operation is performed the record should show what was removed, what was mended and what was learned. These records should be made at the time or immediately in one's recollection. In practically all of our malpractice cases, we find our records are not quite so complete as they should be. The writers have had little occasion to complain of the completeness of the records made by the attending nurse, whether it be the day or night nurse, these nurses seem to do their work well and carefully, their charts appear to be complete. But the so-called practical nurses are ignorant and some of them will be very glad of an opportunity to join in an effort to recover against the doctor. I might therefore, add that in addition to making complete and accurate records, the doctor "keep an eye" on the practical nurse.

Another caution might be suggested, and we approach that question with some misgivings. More frequent consultations should be had, bearing in mind, however, that the patient ought not to be required to pay too many doctors. The consultant ought not to work without reasonable recommendation. Good judgment should be used, and such judgment ought to indicate when a case is sufficiently serious or the family sufficiently dangerous to require consultation for the protection of the doctor and for the health of the patient.

Secondly. Wherever possible, have pathologic examinations made and records kept. The standardization of our hospitals has done much for you in this department, but all records should be checked from time to time, and it may be that your patient is not in a standardized hospital. Your records can nevertheless be made quite complete if you exercise care.

Thirdly. Do not hesitate to call an honorable and able professional man for consultation. You have nothing to fear from the man of honor and high professional standing. Lawyers do this, business men do it, all do it, and as a rule, the professional man of high ethics and good moral fibre will thank you for calling him, even if the patient is unable to pay, because it enables him to perform that high duty that he owes to humanity.

Fourthly. Secure consent before you operate, and if you have cause for suspicion that the parties are not of good character, require written consent to be signed. In major opera-

8 Rarely failure to use a method of treatment which is used by the majority or a respectable minority¹

Physicians are themselves to blame for the greatest percentage of suits. In replies to our inquiries, not one source of information put this cause below 60 per cent, while some placed it as high as 80 per cent. Inopportune remarks must be avoided. One must remember that, whenever a patient is dissatisfied with results, all that is necessary to start a lawsuit is the comment of some doctor, criticizing the work of a previous physician.

A considerable number of these suits are due to the specialist who, though he does not mean to, makes a statement which can easily be construed as meaning that the previously attending physician was negligent. One communication received states: "The specialist is unknowingly and unwittingly drawn into malpractice cases by the simple method of the patient presenting himself at the office of the specialist, often upon the advice of a lawyer who is somewhere in the background. The patient very cautiously gives little, if any, history of the attendance by a previous physician, seeks a diagnosis, which is usually given, and then never comes back. The specialist is very much surprised, in the course of two years, to be summoned as a witness for the plaintiff and have to give up time at the ordinary summons rate."

Inopportune remarks are the result of a lack of proper history taking and a poor knowledge of human psychology. By way of explanation, one has a patient with a poor result, the patient is in a state of self-pity, he then presents himself at the doctor's office. It is just the tone of the physician's voice when he says "Who treated you for this condition?" that increases the sense of self-pity and he brings in a malpractice claim. Then again, we have the type of physician who, without knowledge of the particular type of injury or sickness, or a knowledge of the particular patient that presents himself, will in some way lead that patient to believe that if he had come to him in the first place the present condition would not have occurred.

There is another class of "inopportune remarks" that causes malpractice suits. We have found that any number of doctors have been drawn into malpractice suits by simply answering hypothetical questions put before them by "lawyer friends."

The second group of causes consists of these factors: personal enmity, animosity and jealousy among members of the profession. One source of information writes: "We have seen a great many malpractice cases arise out of a personal enmity between physicians or between di-

visions of a local medical society. We have all ways felt that malpractice cases were not the place to get even. A malpractice suit that is successfully prosecuted tends to breed other cases of a similar nature and the activity of a physician in assisting a plaintiff in one case may ultimately result to his own detriment."

Another source states, "Our experience and the impression created in reading the statements of various doctors in regard to these cases in several thousand instances, lead us to believe that this personal equation is one which is a personal factor in causing these suits to be brought." There are many communities where such a feeling exists. One letter states: "There is also a breaking away from the old situation of physician and patient, probably due to a transient or floating population, plus a certain foreign element. With this situation in mind, all physicians should be very guarded in taking a case of another physician. We have noticed, too, that there is a slacking off in the subsequent attending physician calling up the previous physician and telling him that the patient has come under his care. This courtesy of ethics seems to have fallen by the wayside. It is my opinion that, if this little courtesy were adhered to, the average physician would save himself a lot of trouble. In the final analysis, as previously stated, about 65 per cent of the present claims were due to the remarks made by subsequent physicians. Of this amount we would say that at least 45 per cent were incautious remarks, not made with any malicious intent, or even no remarks made at all, but mere gestures or acts of the subsequent attending physician, from which the patient drew an inference that he had been wronged. The other 20 per cent were undoubtedly due to professional jealousy, self-assurance and superiority psychology."

Such statements should make physicians everywhere realize that clean, straightforward adherence to the codes of professional ethics will do much to lessen the incidence of such claims. For men to feel that they possess far greater skill than a group of equally capable men in the same community, is mere conceit. It would be much better for such groups to meet and develop good fellowship than to allow them to remain isolated from each other.

The estimate of counterclaims brought because a physician attempts to collect a bill is twenty per cent. In view of this, it is well to remember the time at which malpractice suits are outlawed. In this state it is two years, though some of our citizens would like to have the time extended.

In the case of fractures, Groves² found causes as follows:

stances talk with him, then advise him as to what we think he should do. If he needs our help we give it, not as a committee, but as individuals. The lawyers here quite generally understand it. In fact, one lawyer called a doctor to his office, told him he had been asked to bring a suit against him and advised him to bring the matter before the committee. He did so and when the lawyer found we had exonerated him, he dropped the case.

"The committee is made up of men who stand very high in the profession and when a lawyer knows that such a set of men have investigated a case and decided that the doctor involved is not guilty of malpractice, he is very shy about bringing a suit. The worth of such a committee has been recognized and now each county has a similar committee and the chairmen of the County Committees constitute a State Committee. A doctor who has a hearing before his County Committee and is aggrieved at their findings, can ask for a hearing before the State Committee."

Conclusions

1 An analysis of the causes of from about 35,000 to 40,000 malpractice suits has been made.

2 Sixty per cent are the result of inopportune remarks of a subsequent attending physician either because of the lack of

knowledge concerning the facts of a case or because of personal animosity or jealousy.

3 Twenty per cent are counterclaims made because the physician attempted to collect his fee.

4 Ten per cent are due to non-use of the x-ray in the diagnosis and reduction of fractures.

5 Ten per cent are due to outside causes as newspaper articles and so called "scientific cults," negligence of nurse, alcoholism, failure to use treatment, etc.

6 The following rules are the best safeguards against malpractice.

- a A cautious tongue
- b Proper use of the x-ray
- c Accurate and complete records
- d Adherence to the code of medical ethics and the application of the golden rule in the care of patients who have been previously attended by another physician
- e A knowledge of the accepted forms of treatment

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NEW ORDER SPEEDS UP ERADICATION OF CATTLE TUBERCULOSIS IN TWENTY-FIVE STATES

The expansion of bovine tuberculosis-eradication work by the Federal Bureau of Animal Industry as a part of the emergency animal disease eradication program under provisions of the Jones Connally act will be governed by new regulations just approved by the Secretary of Agriculture. The first allotments of these funds, a total of \$2,000,000, are for cattle tuberculosis work alone and will be spread over twenty-five states as previously announced. The regulations, designated as B. A. I. Order 344, specify the method of conducting the work, the basis of making appraisals of tuberculous cattle and explain the requirements for cleaning and disinfecting premises and conveyances.

The new regulations differ from those used in the regular conduct of the work principally in allowing states to participate in eradication work whether or not they expend any of their own funds for indemnities or for the cost of testing. The total amount received as indemnity from all sources plus the salvage obtained shall not exceed the appraised value or an amount the owner would receive under the existing plan in his state. The payments for cattle found to be tuberculous will be made on the basis of a maximum of \$20 a head of Federal money for grade cattle and \$50 for registered pure-bred cattle.

MORTALITY RATES

Telegraphic returns from 86 cities with a total population of thirty-seven millions for the week ending June 9 indicate a mortality rate of 11.4 as against a rate of 11.1 for the corresponding week of last year. The highest rate (20.2) appears for Memphis, Tenn., and the lowest (4.6) for Long Beach, Calif. The highest infant mortality rate (21.4) appears for Spokane, Wash., and the lowest for Cambridge, Mass., Canton, Ohio, Duluth, Minn., Long Beach, Calif., Louisville, Ky., New Haven, Conn., and Somerville, Mass., which reported no infant mortality.

The annual rate for 86 cities is 12.3 for the twenty-three weeks of 1934, as against a rate of 11.7 for the corresponding period of the previous year.

SUMMARY OF DEATHS AND DEATH RATES (ANNUAL BASIS) FROM AUTOMOBILE ACCIDENTS PER 100,000 ESTIMATED POPULATION FOR 86 CITIES FOR CORRESPONDING PERIODS OF 1934 AND 1933

	Week ending		First 23 weeks	
	June 9	June 10	1934	1933
	1934	1933		
Total deaths	162	140	3,627	3,167
Death rate	22.6	19.5	22.0	19.2
Deaths due to accidents in city	118	111	2,921	2,538
Death rate	16.4	15.5	17.7	15.4

—Bureau of the Census

tions the patient is under complete anesthesia. The physician may discover conditions not anticipated before the operation was commenced and which if not remedied will endanger life or health. In such cases he may, and perhaps in aggravated cases must, remove the newly discovered danger, but it is always wise to get consent to this action, and the surgeon who does not do so is not using that precaution in his own behalf that bespeaks his care in behalf of others. While the pathologic requirements of the hospital, if the patient is in a standardized one, is some protection, the careful surgeon will require still greater protection, because it is a principle of law that one's body is not to be mutilated in any manner except by one's consent. There are exceptions, for instance, one may be carried to a hospital in an unconscious condition with no one to speak for him, if not operated upon, he may die. But the exception is not the rule.

We do not wish you to believe that it is our view that the physician or surgeon is never at fault. We have lazy doctors as we have lazy lawyers, and others, who neglect their cases as the lawyer neglects his, who fail to keep abreast of the advancement of medical science and skill, as the lawyer fails to read the decisions and takes his cases in a slipshod manner. If his laziness in attending to the case or his laziness in keeping abreast of his profession results in damage to the patient who places himself in his charge, this doctor should be punished, and the way to punish him, outside of your profession, is to make him pay damages. But the best way to punish him is within your organization. Occasionally a good man is unable to defend himself because he has failed to protect himself by keeping records, and is unable to show what he did do.

We now have but 10 per cent left, due to other causes. Cannon seems to sum these up extremely well. "The outside causes of suits against doctors are many. People of the present day, without appreciating the fact that a little knowledge is a dangerous thing, read articles found in newspapers, some of them written by advertising doctors, and think from such reading that they know something about medicine and surgery, and they become critical. The smattering of knowledge that they have leads them to become fault-finders, and they love to profit by their fault-finding."

"Still another cause of trouble is the fake doctor. Never in the history of medicine have we had so many 'isms' in the medical and surgical field. To repeat the scientific names which men and women attach to themselves to fool the public into believing that they have scientific knowledge, would tax one's memory. Many of these affixes or prefixes mean nothing to the educated mind, but mean much to the public. Ignorant people go to these men after

they have been ill or have suffered an operation, and they leave firmly convinced that their former physician or surgeon has ruined them forever. These people cause trouble."

To think that because he is insured he does not pay, is incorrect. The policyholder, the one insured, always pays. The truth of this is well shown by the fact that in any form of insurance, if the amount deposited by policyholders is not enough for the company to carry out the agreement, they, the policyholders, must pay more money because the insurance company will be compelled to increase the rate on future insurance. The New Haven Medical Association had this very experience a few years ago. Their insurance company in seven years expended \$44,597. The amount deposited by the group with the company was \$18,127. The company then notified the Association that payments in future must be four to six times more than had been previously paid.

To say that the incidence of suits cannot be decreased is fallacious. The work of the New Haven Medical Association in decreasing the suits in their territory is commendable. They organized a committee on Medical Ethics and Department. The work of this group, and the results, can be best brought out by quoting from a letter received from the chairman, Dr. Frank H. Wheeler. "As to the percentage of suits started by indiscreet or malicious remarks of another doctor, it is hard to estimate. Our committee, as you will note, put it at 75 per cent. I saw an estimate the other day by some doctor as 80 per cent. We found that not only an injudicious word, but even the lifting of the eyebrows or shrug of the shoulders when examining a case treated by another doctor was enough to start a suit. Such an occurrence repeated to a shyster lawyer is often enough to start him making trouble for a doctor."

"Our committee was organized about a year and a half ago. There were several suits then pending. We investigated several of them and gave advice as to their handling. In four cases we advised settlement as the doctor was evidently at fault. One was settled, but the insurance company elected to contest two, and lost them. The fourth has not come to trial. We advised fighting the others. One of these has been tried and the doctor won. The others are resting in abeyance."

"Since the committee was formed several cases have been threatened. We investigated them and advised settlement in one, and in all the others we advised resisting. It would appear that nearly all of these latter have been dropped. No suits have been brought."

"I would call your attention to the name of our committee. It is not a defense committee. We are not appointed to defend a doctor, but when a member of our Association is accused of any misdemeanor we investigate the circum-

CASE RECORDS
of the
MASSACHUSETTS GENERAL
HOSPITAL

ANTE MORTEM AND POST MORTEM RECORDS AS USED
IN WEEKLY CLINICAL PATHOLOGIC EXERCISES

EDITED BY RICHARD C. CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 20261

PRESENTATION OF CASE

A fifty-six year old American widow entered complaining of pain in the lower abdomen of six weeks' duration.

Six weeks before admission the patient awoke at night with severe griping colicky pain across the lower abdomen. She vomited small amounts of frothy fluid. During a bowel movement that evening she had excruciating colicky pain in both lower quadrants running down over the pubic region, more marked on the right with some radiation throughout her entire abdomen. She had no urinary disturbance except slight frequency. There was no burning or urinary clouding. She continued to have similar attacks of pain during the intervening six weeks, and took considerable morphine for relief. Associated with this pain she had increased constipation, her bowels moving only once in three or four days despite the taking of cathartics. For the past two weeks she had had a slight dry cough and for the past week a small amount of ankle edema. One week before admission while lying in bed she found that she could not use her right leg because of severe groin pain. During the past four days the lower abdominal pain had become more severe and had been associated with marked tenderness in the right lower quadrant, flank and groin. The bowels moved slightly, with apparently normal feces. Two days before admission she vomited a small amount of light frothy fluid during an attack of abdominal pain.

The patient had had diabetes for fifteen years and had been given a diet with instructions for testing her urine. Under this régime her urine had been sugar free for about half the time and slightly positive for the remainder. She had had a little burning upon urination, but no clouding of the urine.

Her family and marital histories are non-contributory.

Physical examination showed a fairly well developed and nourished woman appearing acutely ill. The pupils were small and reacted sluggishly. The upper teeth were false. The tongue was coated. Examination of the chest was negative. The blood pressure was 125/80. The abdomen was moderately distended and tympanitic.

There was extreme tenderness over the right lower quadrant flank and costovertebral angle. There was moderate tenderness in the right inguinal region but no evident glandular enlargement. Peristalsis was normal. Rectal examination showed a small external hemorrhoidal tab. There were marked tenderness and spasm high up on the right. Pelvic examination showed extreme tenderness and firm resistance high up on the right. There was moderate edema of both lower legs.

The temperature was 101.1° , the pulse 100, the respiration 20.

Examination of the urine showed a slight trace of albumin and a slight trace of sugar. There was a very small amount of acetone, but no diacetic acid. Examination of the blood showed a white cell count of 58,000. One examination of the stool was guaiac-negative. A Hinton test was negative. The blood sugar was 200 milligrams per 100 cubic centimeters, the non-protein nitrogen 32 milligrams, the carbon dioxide combining power 58.2, the serum protein 6 per cent.

A flat x-ray film of the abdomen showed an enormous amount of gas in the colon extending from the splenic flexure to the cecum.

Operation was performed. She did poorly after it. Her white cell count was 26,600. A red blood cell count done on the day following operation was 2,750,000, with a hemoglobin of 35 per cent. A transfusion was done. Her diabetes was fairly well controlled, but she became semicomatose and died four days after admission.

X-RAY INTERPRETATION

DR. TRACY B. MALLORY: Will you comment on the x-ray films, Dr. Holmes?

DR. GEORGE W. HOLMES: This film shows a distended large bowel. The distention is most marked in the cecum and ascending colon and apparently stops rather abruptly near the splenic flexure. There is gas beyond this bowel, but I think it is in the small bowel.

DR. HENRY H. FAXON: Dr. Holmes, could you see diverticula without barium in a film of that kind?

DR. HOLMES: I think not.

In addition she has marked calcification of the pelvic arteries and a shadow in the pelvis which might be a calcified fibroid.

I should like to be able to go a little farther in an attempt to locate the obstruction. If this were large bowel we should expect to see the haustral formation in it that we see here. This is distended bowel, not paralyzed bowel. If the obstruction were low down we should expect gas to show in the whole length of the colon. It would seem that if there is an obstruction it must be above the pelvic rim.

BACKWARD DISPLACEMENT AFTER ANKLE FRACTURE

Corrective Operations

BY FREDERIC JAY COTTON, M.D.,* AND GORDON MACKAY MORRISON, M.D.*

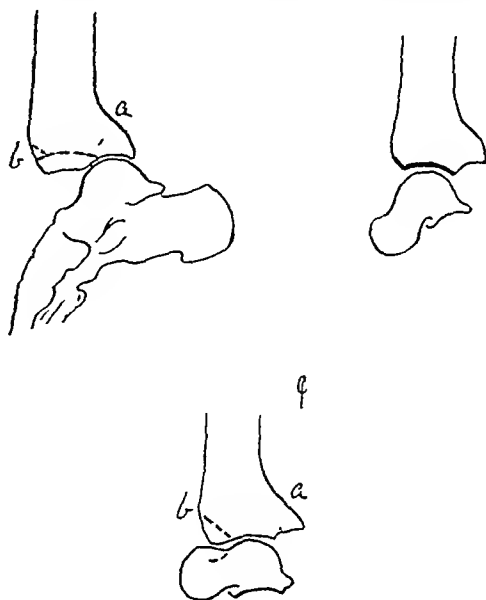
NOT unusually fractures at the ankle with backward dislocation of the foot are followed by crippling disability. If possible this should be a matter of one cut, with removal of the

The problem of relief forces us to define two classes

1 Those in which backward dislocation of the foot and fragment give an inadequate (often unstable) weight-bearing joint with malleoli much displaced, and

2 Those with a decent enough, though not normal, weight-bearing joint disabled by painful contact at the front of the joint on motion, in dorsiflexion

For the first class nothing is of avail save an extensive reconstruction of the whole ankle, a useful operation, though formidable. The malleoli are divided at the joint level, and from the cut of the outer malleolus, the joint is opened horizontally forward. The malleolus then dragged down a bit gives access to the side of the tibia. With a large chisel (of wide curved concavity) a single cut is made horizontally across the joint, leaving a quarter cylinder concave cut (see first illustration) for the astragalus to set into. The next step is to loosen up the whole joint. This means extensive ligament tearing by external force or (not so good) instrumental leverage within the joint. This must be complete enough to allow of the astragalus being dragged forward (see second illustration) to a proper position. Sometimes the malleoli must be refitted. Pins or the like are not needed. Inasmuch as the cartilage of the top of the astragalus is not cut and should not be bruised, direct ankylosis does not occur. The results are rather better than one might reasonably expect. In the lesser cases, the remedy is less. One need only abolish the check to dorsiflexion. That means an incision on the outer side of the joint, a thin osteotome slipped in so sloped as to clear a generous wedge straight across the front of the tibia. (See lower figure



TYPE III.—COTTON FRACTURE

Upper figure left—
(a) shows the approximate line of the posterior tibial fracture

The astragalus is in contact with the rear fragment but out of weight bearing contact with the main articular surface of the tibia. Dorsal motion absolutely blocked. A new curved articular facet is cut in the tibia (b) to receive the top of the astragalus.

Upper figure right—
This cylindrically concave surface is shown by the heavy line. Into it the astragalus is fitted. No attempt is made to move or remove the projecting (and very inaccessible) posterior fragment.

Lower figure
(a) line of break (b) edge of tibia removed to clear dorsal flexion—and with it a space gouged out of the astragalus to give more room.

wedge in one piece. If there has been much irritating contact the neck of the astragalus may show overgrowth, and may be dug away, liberally. One need not fear ankylosis for there is no longer any bone contact. The only chance is of a recurrence of bony overgrowth. As a rule the operation, very simple as it is, is well worth while.

*The type sometimes called Cotton's fracture.

*Cotton and Morrison—For records and addresses of authors see page 317 issue of April 12, 1934.

IMAGINARY ILLS

In an address before the American College of Physicians at its recent meeting, Dr. Edward Weiss of Philadelphia stated that a large number of people believe that they are ill but without any real basis for this fear. This opinion was based on the results of a poll of medical school professors who have found that thirty-five per cent of those seeking professional help were the victims of emotional problems.

Many operations have been performed to rid patients of imaginary troubles, according to Dr. Weiss

He cited one case of a young woman who was subjected to four operations because of symptoms which had no pathological evidence of organic trouble. In this case the symptoms were brought out by the fact that all of her sisters were married and the patient feared that she would have to remain a lonely spinster.

This seems to indicate that her surgeons had no adequate knowledge of the necessity of the services of the psychoanalyst, and sustains the contention that psychiatry is a neglected subject in medical education.

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PRESENTATION OF CASE

A fifty six year old American widow entered complaining of pain in the lower abdomen of six weeks' duration.

Six weeks before admission the patient awoke at night with severe griping colicky pain across the lower abdomen. She vomited small amounts of frothy fluid. During a bowel movement the following evening she had excruciating colicky pain in both lower quadrants running down over the pubic region more marked on the right with some radiation throughout her entire abdomen. She had no urinary disturbance except slight frequency. There was no burning or urinary clouding. She continued to have similar attacks of pain during the intervening six weeks, and took considerable morphine for relief. Associated with this pain she had increased constipation, her bowels moving only once in three or four days despite the taking of cathartics. For the past two weeks she had had a slight dry cough and for the past week a small amount of ankle edema. One week before admission while lying in bed she found that she could not use her right leg because of severe groin pain. During the past four days the lower abdominal pain had become more severe and had been associated with marked tenderness in the right lower quadrant, flank and groin. The bowels moved slightly, with apparently normal feces. Two days before admission she vomited a small amount of light frothy fluid during an attack of abdominal pain.

The patient had had diabetes for fifteen years and had been given a diet with instructions for testing her urine. Under this régime her urine had been sugar free for about half the time and slightly positive for the remainder. She had had a little burning upon urination, but no clouding of the urine.

Her family and marital histories are non-contributory.

Physical examination showed a fairly well developed and nourished woman appearing acutely ill. The pupils were small and reacted sluggishly. The upper teeth were false. The tongue was coated. Examination of the chest was negative. The blood pressure was 125/80. The abdomen was moderately distended and tympa-

nitic. There was extreme tenderness over the right lower quadrant, flank and costovertebral angle. There was moderate tenderness in the right inguinal region but no evident glandular enlargement. Peristalsis was normal. Rectal examination showed a small external hemorrhoidal tab. There were marked tenderness and spasm high up on the right. Pelvic examination showed extreme tenderness and firm resistance high up on the right. There was moderate edema of both lower legs.

The temperature was 101.1° , the pulse 100, the respiration 20.

Examination of the urine showed a slight trace of albumin and a slight trace of sugar. There was a very small amount of acetone but no diacetic acid. Examination of the blood showed a white cell count of 58,000. One examination of the stool was guaiac-negative. A Hinton test was negative. The blood sugar was 200 milligrams per 100 cubic centimeters, the non-protein nitrogen 32 milligrams, the carbon dioxide combining power 58.2, the serum protein 6 per cent.

A flat x-ray film of the abdomen showed an enormous amount of gas in the colon extending from the splenic flexure to the cecum.

Operation was performed. She did poorly after it. Her white cell count was 26,600. A red blood cell count done on the day following operation was 2,750,000, with a hemoglobin of 35 per cent. A transfusion was done. Her diabetes was fairly well controlled, but she became semicomatose and died four days after admission.

X-RAY INTERPRETATION

DR. TRACY B. MALLORY: Will you comment on the x-ray films, Dr. Holmes?

DR. GEORGE W. HOLMES: This film shows a distended large bowel. The distention is most marked in the cecum and ascending colon and apparently stops rather abruptly near the splenic flexure. There is gas beyond this bowel, but I think it is in the small bowel.

DR. HENRY H. FAXON: Dr. Holmes, could you see diverticula without barium in a film of that kind?

DR. HOLMES: I think not.

In addition she has marked calcification of the pelvic arteries and a shadow in the pelvis which might be a calcified fibroid.

I should like to be able to go a little farther in an attempt to locate the obstruction. If this were large bowel we should expect to see the haustral formation in it that we see here. This is distended bowel not paralyzed bowel. If the obstruction were low down we should expect gas to show in the whole length of the colon. It would seem that if there is an obstruction it must be above the pelvic rim.

FURTHER HISTORY

The operation was incision and drainage of a retroperitoneal abscess in the right flank.

DIFFERENTIAL DIAGNOSIS

DR FAXON The time is short and this case is similar in many respects to the one we have already heard, so I will go through it rapidly

She had colicky pain that came on at night and was severe enough to wake her. In a woman of fifty-six large bowel obstruction is the first thing that comes to mind.

"She vomited small amounts of frothy fluid." Frothy fluid is mentioned again in the history. I can attach no especial significance to it except that each time it is mentioned it is associated with the pain, does not persist, and is not a very striking feature.

The bowel movement seems to have given rather than relieved the pain. If the person was having obstruction, as has been said before, one might expect that an evacuation might well relieve her. In this case she had even more pain, and we think of perforation.

This condition lasted for six weeks, which means that the obstruction must have been partial rather than complete. She had increased constipation, which is to be expected if our diagnosis is correct.

There is no mention in the history of any blood in her stools at this or any other time.

The pain started six weeks before she came in, but one week before she came in she developed a process in the right lower quadrant which was enough to restrict the motion of the leg, was very tender and gave later a high white cell count and temperature.

There was no attempt made to correlate the colicky pain with peristalsis, but certainly from the examination and from the fact that peristalsis was, as noted here, "normal", it would seem that the inflammatory process in the right lower quadrant was a local rather than a general peritonitis, and the obstructive element mechanical rather than inflammatory in origin.

I do not think the mass and the inflammatory process play a part in the edema of the extremities, but think this was due to general conditions of her illness and long-standing sepsis.

She had enough infection to raise her temperature to 101°, and yet the pulse, in a fairly elderly woman, was not over 100.

The white blood cell count was 58,000. That brings us up with a start. Either the count was incorrect, which I suppose I should put down as the last possibility, or else she had some localized shutting down of circulation with resulting gangrene. We might say that the white cell count was due to infection alone, but in an old woman it seems high. Possibly she had some blood disease, but we are given no other information to bear this out.

From the story so far she has had enough

lower abdominal cramps to make me think that an obstruction of the large bowel would have to be well along in the large bowel. I was at tempting to make the cause of the obstruction and the mass in the right lower quadrant one and the same, yet, if it were, she would not have given this x-ray picture and her story would have been different.

"Incision and drainage of a retroperitoneal abscess in the right flank was performed." I wonder if that statement is correct. I wonder whether that might have been a retroperitoneal drainage of an abscess that did not necessarily start retroperitoneally. The question comes up as to whether she had a retroperitoneal mass in the first place causing obstruction from extrinsic pressure on the bowel. I should not think that was likely.

The low red cell count and hemoglobin, it seems to me, can be accounted for either by malignancy or almost equally well on the basis of long-standing chronic sepsis.

To sum up, we know she had diabetes which was under control. We know she was at an age when she would probably show the changes of long-standing severe sepsis and the changes one might expect in a woman of her years. I think that the picture is that of large bowel obstruction with the lesion in the region of the splenic flexure. I picture the situation as being this. She developed obstruction which either perforated into the general peritoneal cavity and walled off, or else perforated retroperitoneally, and thus gave rise to the inflammatory mass in the right lower quadrant. Any such mass in the right lower quadrant certainly by the law of averages should be an appendix that had ruptured. Yet despite what Dr Jones brought out in the other case it seems to me she has had too much crampy pain to suppose this to be a case of an appendix that had ruptured. As to the cause of obstruction in the large bowel, we come down to the two favorites of the day, cancer or diverticulum. The story leaves the left lower quadrant free from symptoms. That should exclude diverticulum, and yet she had no bleeding from the rectum, which one might expect with cancer. I would put my final diagnosis down as obstruction of the large bowel due to diverticulum with perforation in the region of the ascending colon and cecum which went on to abscess formation and was drained retroperitoneally.

I do not know the immediate cause of death, but I think she died from the combination of all she had been through rather than from any terminal event.

DR FRANKLIN G. BALCH, JR. My diagnosis in this case was an abscess in the right lower quadrant of unknown origin. It was obvious where the incision was to be made in this case. A right-sided incision was done, coming down on an inflammatory edematous mass. On exploring further the abscess was found to be retro-

peritoneal, extending up toward the kidney and down behind toward the bladder. As we could not find out where it came from, we put in a drain below and a drain above and closed the wound.

CLINICAL DIAGNOSES

Retroperitoneal abscess
Diabetes

ANATOMIC DIAGNOSES

Adenocarcinoma of the sigmoid with metastases to the heart
Perforation of tumor with large right retroperitoneal abscess
Operative wound, drainage of right retroperitoneal abscess
Necrosis of right psoas and quadratus muscles
Adenomatous polyp of the sigmoid
Cervical polyp
Hemangioma of the liver
Arteriosclerosis, moderate aortic and coronary
(Diabetes mellitus)

PATHOLOGIC DISCUSSION

DR. MALLORY The autopsy showed of course the retroperitoneal abscess which Dr. Balch described. It involved the entire right side of the posterior abdominal wall, going up as far as the kidney and at its lower extremity apparently perforating into the pelvis. There was no generalized peritonitis.

The source of the abscess was at first puzzling until we found a carcinoma of the sigmoid which had ruptured retroperitoneally and the pus had drained around the pelvic brim behind the peritoneum and up on the right side instead of on the left, where one would expect it in a case of rupture of the sigmoid.

A SURGEON Was the cecum perfectly intact?

DR. MALLORY Yes. The appendix was also normal, though it lay in immediate apposition to the pelvic portion of the abscess.

An oddity of the case was the finding of a single metastasis in the heart muscle.

CASE 20262

PRESENTATION OF CASE

First admission A sixty year old Irish janitor entered complaining of a productive cough.

For the past ten or fifteen years he had had colds associated with cough and wheezing during the autumn. These attacks would usually disappear toward Christmas. This condition came on as usual four to six weeks before admission and became worse. It consisted of a rather severe cough with occasional blood streaked material. There was no pain in the

chest. There was some wheezing and some watering of the eyes. During the past year he had become considerably weaker and for the past four weeks had noticed a tightness in the left epigastrium. He had lost ten or fifteen pounds during the past year.

Family history His father was dead, cause unknown. His mother died of pneumonia. There was no family history of tuberculosis, cancer, asthma, hay fever or diabetes.

Marital history He had been married twenty six years. His wife and two children were living and well. There had been no miscarriages.

Past history Twenty-five years before admission he had worked in a gold mine in Australia for a period of four years. During the past few years he had been a janitor. His work consisted in taking care of furnaces among other things. The gas fumes from the furnaces had always aggravated his condition. He did not remember any childhood diseases. He had had some rheumatism and about five years before entry had all of his teeth pulled with some relief. While in Australia he had had typhoid fever. He believed he had some pleurisy on the left side five years ago. This was characterized by pain in the chest with breathing.

Physical examination showed a poorly developed and emaciated man. There were small pea-sized glands in the right axilla and the right epitrochlear and inguinal regions. His chest was flat with a depressed xiphoid. The expansion on the right side was greater than on the left. Throughout both apices there were fine and medium râles, more marked on the left. Throughout both lung fields there were inconstant sibilant râles. At the left apex the breath sounds were bronchial in character. Tactile fremitus and spoken voice were increased. The heart sounds were of good quality. There were no thrills or murmurs. The blood pressure was 128/80. The ankle jerks were absent.

The temperature was 98°, the pulse 60, the respiration 20.

Examination of the urine was negative. Examination of the blood showed a red cell count of 4,450,000 with a hemoglobin of 60 per cent. The white cell count was 6,300, 75 per cent polymorphonuclears, 20 per cent lymphocytes and 5 per cent large mononuclears. The sputum was fluid and showed a few Gram-positive cocci in chains, some elastic tissue and very few cells. No tubercle bacilli were found. One of two stool examinations showed a positive guaiac. The Hinton was negative. The non-protein nitrogen of the blood was 38 milligrams. A tuberculin test of 1:1000 was negative in forty-eight hours.

X-ray examination The upper three fourths of both lung fields showed dense mottled dull-

ness with definite evidence of fibrosis and distortion of the upper mediastinum and of the cardiac shadow, with evidence of thickening of the pleura in the entire right axillary border and the upper half of the left axillary border. The mottled areas in the lungs were quite dense and equal to that of the ribs. No definite cavity was visualized.

He improved somewhat on bed rest and was discharged to the Outpatient Department on the thirteenth day.

History of interval He gained a few pounds for the first month after discharge, but afterwards lost about five pounds. He felt well during the summer, but after the onset of the cold weather his wheezing returned, along with increasing dyspnea and cough. For the past two weeks before his second entry he coughed up about a tablespoonful of gray-white material daily. At the time of readmission he was quite weak. He was seen in the Outpatient Department several times during the interval. His condition in general remained about the same. He entered the Emergency Ward on his own initiative because of weakness and dyspnea.

Second admission, a year and two weeks after his previous discharge.

Physical examination The physical signs in his chest were as follows. The trachea was displaced to the right. There was dullness with increased tactile fremitus and bronchial breath sounds in the right upper lung field. In the left upper lung field tactile fremitus and breath sounds were absent, spoken voice and whispered voice were decreased. The rest of the examination was as at his previous admission.

Laboratory examinations were about the same as at his previous admission.

X-ray showed that there had been a marked change in the appearance of the lung fields since the previous observation. The left lung was now completely collapsed. The right lung was still fibrosed and showed unusually dense markings. There was no evidence of cavity. The density of the right upper lobe was that of the ribs.

Five days after admission 600 cubic centimeters of air was removed from the left chest with some relief. An x-ray film on the following day showed that there had been no re-expansion of the collapsed lung. He rapidly failed, and died ten days after admission.

DIFFERENTIAL DIAGNOSIS

DR DONALD S. KING The summary of the history is that of a man of sixty who twenty-five years ago worked for four years in a gold mine in Australia. Of course we cannot throw out that occupational story. He was apparently well for ten years, then about fifteen years before admission he began to have autumnal attacks of cough with expectoration and wheez-

ing. My allergic training will not allow me to pass by that picture of seasonal asthma. It is of course a common story with a ragweed pollen sensitization, but as we go on with the history I do not believe that we can place much emphasis upon a possible sensitization in this case. The story of repeated attacks in the autumn, clearing by Christmas time, is nevertheless interesting.

He had had pleurisy five years before. The present illness showed weakness, weight loss, cough, sputum, and dyspnea.

Following discharge from the hospital he was better—in fact, almost well—but by the next autumn he again had weakness, dyspnea, and cough and had had some bloody sputum. At the second admission he had the physical signs and x-ray evidence of spontaneous pneumothorax at the left apex.

On the basis of the history, then, of pleurisy, hemoptysis, and spontaneous pneumothorax, our first thought is tuberculosis. The physical signs of moist râles at both apices are consistent with such a diagnosis. The sibilant râles throughout the chest could be explained on this basis.

Laboratory examination, however, does not support the diagnosis of tuberculosis. No tubercle bacilli were found in the sputum. A negative intradermal tuberculin test with a 1:1000 dilution is significant. A test should have been done with a 1:100 dilution, but it would probably have been negative.

I am interested in the report of elastic fibers in the sputum. In these days we have almost forgotten to look for these fibers in a sputum examination. In spite of the record, I doubt their presence in this sputum because a sputum described as fluid and containing almost no cells would rarely if ever contain elastic fibers. If elastic fibers are present it is of course definite evidence of lung destruction such as is present in lung abscess, but under the present conditions I am going to assume that elastic fibers were not present.

The first impression one gets from the x-ray film is of silicosis rather than tuberculosis or other pathological process. Uncomplicated tuberculosis could perhaps give this x-ray picture, but I believe the shadow is too dense to allow of such an interpretation. A malignant process should be considered, but certainly the x-ray picture is not typical of such a process.

On the basis of the occupational history, symptoms, laboratory findings, and x-ray I would then make a diagnosis of silicosis. The particular problem in differential diagnosis is whether we are dealing with silicosis alone or silicosis plus tuberculosis.

The history is a little unusual in that his exposure occurred twenty years before his hospital entrance. He worked for only four years and then had no lung symptoms until many

years later. This is however, not a particularly uncommon story in silicosis with or without tuberculosis. We certainly lack any definite evidence of tuberculosis but the literature reports a number of cases free from tubercle bacilli during life which showed tuberculosis at autopsy. It is true also that many of the men who have reported cases have felt that "massive fibrosis" as shown in the x-ray plate practically always means that there is an associated tuberculosis.

I shall be interested in getting Dr. Alton Pope's reaction on this problem since in his capacity as Director of the Tuberculosis Division in the Massachusetts State Department of Health he has for the past year been engaged in a study of the silicosis problem in Massachusetts with especial reference to the association of silicosis and tuberculosis. I showed him this film yesterday and I believe at that time he felt that the x-ray findings could be explained on the basis of silicosis alone. The problem has become an important industrial one in this State as elsewhere and the special Industrial Disease Commission with which Dr. Pope has been working has presented a two hundred and fifteen page report to the Legislature. The present rates for employers' insurance in the granite and foundry industries are now exorbitant. As I understand it for every one hundred dollars paid in wages ten dollars has now to be paid for insurance. Is that correct, Dr. Pope?

DR ALTON S. POPE. Twelve dollars out of every hundred and a deposit of two hundred dollars to start with.

DR KING. This is a very high insurance rate and the problem is of course of pressing importance.

Another diagnosis which one should consider briefly is malignancy. It is of course interesting that carcinoma of the lung has been said to occur so frequently in miners, but in the two groups reported in the Schneeberg mines and in the mines at Joachimstal the miners were probably working with a radium bearing ore whose effect would be different from that of the gold ore in Australia. In this particular case, however, I see no reason for making a diagnosis of carcinoma.

My diagnosis is silicosis plus tuberculosis, the diagnosis of tuberculosis being added on the law of chances rather than because there is any definite evidence of tuberculosis in this case.

A PHYSICIAN. Is spontaneous pneumothorax apt to occur in straight silicosis cases?

DR KING. I do not think it is common but I have seen cases. A great many cases do have it, but that is usually said to be due to tuberculosis. I shall be very much interested to know whether this was silicosis alone or silicosis and tuberculosis.

DR TRACY B. MALLORY. Dr. Pope, have you anything to add?

DR POPE. I think I have very little to add to

what Dr. King has said. Unfortunately I missed the first part of the history.

The negative tuberculin is I think very important in this case. Of course if it were tuberculosis and silicosis though, it would be entirely possible to have a negative test with as advanced a stage of the disease as this apparently is.

I think the roentgenological findings are consistent probably with either advanced silicosis or advanced silicosis with tuberculosis. It is extremely difficult in some of these cases with so much involvement to say we have a superimposed tuberculosis.

The history in regard to the length of time between exposure to silica dust and the development of the disease is not unusual in silicosis. I remember particularly a case I saw in the Outpatient Department, a sand blaster in Lynn. He left there in 1919 and worked as a truck farmer. In 1922 he came into the hospital with far advanced silicosis and tuberculosis. The symptoms dated a year before he came in here.

I agree with Dr. King that the case under discussion to day is advanced silicosis, probably complicated with tuberculosis but I think we shall have to rely on the autopsy in regard to the last point.

DR KING. I might show you an x-ray film of another case that was proved to be silicosis and tuberculosis. The x-ray appearance in this case is somewhat different from the one we have been discussing and there is unquestionably a large cavity present which looks like tuberculosis. The sputum was full of tubercle bacilli and the patient died of hemorrhage.

DR J. H. MEANS. I should like to ask Dr. King or Dr. Pope whether the increasing number of judgments in favor of employees have forced employers to take any better precautions against the development of silicosis or to diminish the exposure to silica dust in the workrooms.

DR KING. Dr. Pope has had much more experience along that line and can answer the question far better than I.

DR POPE. Two or three years ago one firm in Massachusetts had a consultation with Dr. Drinker, and under his direction has installed a dust removal system that has given very satisfactory results. This is the only granite plant in the State that has a really effective exhaust system. Most firms have installed exhausts on their surface-cutters as required, but on inspection it was often found that the dust was discharged where it was carried back into the shed. In Quincy most of the firms have dropped compensation insurance, and are running the risk of suits at common law.

It is only in the past two or three years that the hazard from silicosis in foundries has been generally recognized. In our examination of

some 1,600 foundry workers we found about 9 per cent had evidence of silicosis alone and an additional 25 per cent silicosis complicated with tuberculosis. That is about one-half the frequency of silicosis and tuberculosis found in granite workers.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Silicosis

ANATOMIO DIAGNOSES

Silicosis

Pulmonary emphysema

Pneumothorax, left

Pulmonary collapse, partial, left

PATHOLOGIO DISCUSSION

DR MALLORY The autopsy on this man showed, so far as I have been able to make out, pure silicosis. I have the lungs here and I will pass them around. The major portion of his upper lobes and a very large portion of both lower lobes were absolutely atelectatic, and of a firmness which varies from that of shoe leather almost up to rock. It is extraordinarily dense material. In some places, for instance at this apex, there is hardly an alveolus left—perfectly solid tissue. In the remaining portions of the lung, as one would expect, there is a well-marked emphysema. The persisting alveoli for the most part are dilated up to three, five or ten times the normal size.

A SURGEON Did you find the rupture that caused the spontaneous pneumothorax?

DR MALLORY We did not. There were innumerable emphysematous blebs, from any one of which it could have occurred. At the time of autopsy the pneumothorax had practically resolved.

I will take a minute to show the sections. These pink whorls of dense fibrous tissue are very characteristic of silicosis, and as I move the slide around you can see how densely they are packed. They lie almost invariably in interlobular septa in the early stage, one can trace out the lymphatics of the lungs very accurately by the presence of these nodules in and around them. In between these areas there is an extreme degree of emphysematous dilatation of the

alveoli. Besides the silicosis there is a distinctly more marked degree of anthracosis than usual, possibly related to his terminal period as a janitor.

The blood vessels throughout the lung, but particularly in the neighborhood of the most involved areas, show extreme degrees of intimal thickening. Here is one artery in which less than one fifth of the lumen is still patent.

DR KING Do you think he had elastic fibers in his sputum?

DR MALLORY I doubt it very much. There is no active destruction of lung tissue going on anywhere.

DR MEANS I should like to ask whether his vital capacity was ever determined.

A HOUSE OFFICER No, sir.

DR MEANS I think vital capacity ought to be measured in cases of this kind, because it is a quantitative measure that throws some light on the degree of limitation of an important function.

DR MALLORY My impression at autopsy was that one could hardly get a lower vital capacity than this man would have shown.

DR MEANS Dr McCann of Rochester is attempting to work out a ratio between residual air, which can be measured without too much difficulty, and vital capacity, in silicosis, because he believes that an index may be obtainable which will be useful in an objective way for determining the degree of limitation, evidence that will be valuable when these cases come up in court.

A STUDENT How often do you get hemoptysis with silicosis?

DR MALLORY Perhaps Dr Pope will answer that.

DR POPE I do not know. We do get cases, but we examine men who are actually working. Few give histories of hemoptysis.

DR MALLORY One rather interesting thing is that with this tremendous pulmonary involvement, fibrosis in some areas, emphysema everywhere else, and marked pulmonary arterio-sclerosis, his heart weighed only 250 grams and the right ventricular wall measured only 6 millimeters in thickness. That was proportionately a little high perhaps for so small a heart, but would certainly not justify the diagnosis of cor pulmonale.

The New England Journal of Medicine

SUCCESSOR TO

THE BOSTON MEDICAL AND SURGICAL JOURNAL

Established in 1828

Published by THE MASSACHUSETTS MEDICAL SOCIETY
under the jurisdiction of the

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SUBSCRIPTION TERMS \$6.00 per year in advance postage paid for the United States Canada \$7.04 per year \$8.52 per year for all foreign countries belonging to the Postal Union

Material for early publication should be received not later than noon on Saturday. Orders for reprints must be sent to the Journal office, 8 The Fenway

The Journal does not hold itself responsible for statements made by any contributor

Communications should be addressed to The New England Journal of Medicine 8 The Fenway Boston Mass

THE ANNUAL CONGRESS ON MEDICAL EDUCATION, LICENSURE AND HOSPITALS

ONE of the interesting and informative publications of the year is that of the Proceedings of the Annual Congress on Medical Education, Licensure and Hospitals. It should be carefully read by those who are interested in the purposes of the several organizations taking part in this Congress.

As for medical education, great changes have taken place, first, in the elimination of most of the commercial medical schools in existence at the beginning of the present century, secondly, in the consolidation of some weaker schools, and thirdly, in the establishment of classifications of all of the institutions engaged in teaching medicine. It is thereby apparent from the report of Dr. Ray Lyman Wilbur that there has been insufficient progress in bringing a considerable proportion of medical schools up to satisfactory standards in that there is a great

disparity in the quality of teaching even in the Class A schools. This seems to be as great as the difference in quality which existed in a comparison of the Class A and Class C schools at the time of the early classification of these institutions.

Dr. Wilbur contends that the time has come when the lower grade A schools should not stand on a statistical parity with those of higher rank and that one imperative problem is to bring the now doubtful Class A schools up to equal standing with those in the higher level, for it is apparent that the finished products of our medical schools should stand on a practical level of excellence. The intimation expressed by Dr. Wilbur is that the laboratory made the medical schools improve the quality of instruction just as scientific medicine has raised the average quality of medical practice.

Fortunately there is an abundance of good medical education and some weak and struggling schools should either be made to develop adequate teaching methods or cease to function.

The demand of the present age is to provide the country with competent administrators of the art of medical practice.

The establishment of standards on paper will not be effective unless the several states confer on the administrators of the statutes authority to enact laws which will compel medical schools to improve their curricula so that they will conform to the recommendations of the Council on Medical Education and Hospitals. While the majority of the states may adopt the recommendations of the Council, the indisposition of some legislatures to confer the requisite power on departments of education or boards of registration to inspect medical schools, with authority to act, will prevent the general adoption of the standards of the Council.

The difficulty lies in the indifference of the people with respect to the questions involved and the remedy depends on an aroused public understanding of the advantages of scientific medicine which will impress the legislatures with the wisdom of better standards.

Efforts in this direction in some sections have not been effective and other methods than those now employed seem to be necessary. In order to overcome legislative inertia a well-planned campaign must be conducted. In so far as the medical profession is responsible for this legislative apathy in Massachusetts, the *Journal* suggests that the deans of our Class A medical schools appeal to their graduates to unite under the leadership of the Massachusetts Medical Society Committee on Legislation in an effort to instruct the members of the General Court on the economic importance of the administration of the health problems of the state through a higher average of practitioners. Standards of

practice depend on the finished product of medical schools to a large degree. Can the Committee on Legislation feel sure of the united support of graduates of Class A medical schools? It has not been in evidence hitherto.

INCREASED HOSPITAL BEDS FOR TUBERCULOSIS

A THREE-YEAR survey of tuberculosis sanatoria throughout the United States just completed by The National Tuberculosis Association, reveals that general hospitals are opening their doors to tuberculosis cases, increasing facilities are being provided for the care of tuberculous children, and 6,863 new beds for treatment of the disease have been added to the nation's public health armament despite the depression.

These data which have been compiled in the form of a sanatorium directory listing facts about 659 institutions containing a total of 86,917 beds, show that there are now available in the United States, 64 federal institutions containing 11,431 beds, 357 state, county and municipal institutions containing 56,940 beds, 73 private institutions containing 4,344 beds, and 165 semi-private institutions containing 14,202 beds.

According to Dr. Kendall Emerson, Managing Director of the National Tuberculosis Association, the significant aspects of the study are the increase noted in the provision made for children in sanatoria throughout the country and the increasing number of general hospitals that are admitting tuberculous patients. Thus, in Idaho, as a substitute for a state sanatorium, provision has been made to care for tuberculous patients in properly equipped units of two general hospitals, general hospitals are being used extensively to provide beds for terminal and convalescent cases in Detroit, and Chicago, Cleveland, and Philadelphia have opened hospitals for convalescent cases.

This change in attitude has been brought about partly by the increasing use of chest surgery in the treatment of tuberculosis.

THE APPOINTMENT OF DR. OVERHOLSER

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practice depend on the finished product of medical schools to a large degree. Can the Committee on Legislation feel sure of the united support of graduates of Class A medical schools? It has not been in evidence hitherto.

INCREASED HOSPITAL BEDS FOR TUBERCULOSIS

A THREE-YEAR survey of tuberculosis sanatoria throughout the United States just completed by The National Tuberculosis Association, reveals that general hospitals are opening their doors to tuberculosis cases, increasing facilities are being provided for the care of tuberculous children, and 6,863 new beds for treatment of the disease have been added to the nation's public health armament despite the depression.

These data which have been compiled in the form of a sanatorium directory listing facts about 659 institutions containing a total of 86,917 beds, show that there are now available in the United States, 64 federal institutions containing 11,431 beds, 357 state, county and municipal institutions containing 56,940 beds, 73 private institutions containing 4,344 beds, and 165 semi-private institutions containing 14,202 beds.

According to Dr Kendall Emerson, Managing Director of the National Tuberculosis Association, the significant aspects of the study are the increase noted in the provision made for children in sanatoria throughout the country and the increasing number of general hospitals that are admitting tuberculous patients. Thus, in Idaho, as a substitute for a state sanatorium, provision has been made to care for tuberculous patients in properly equipped units of two general hospitals, general hospitals are being used extensively to provide beds for terminal and convalescent cases in Detroit, and Chicago, Cleveland, and Philadelphia have opened hospitals for convalescent cases.

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Malaria was reported from Cohasset, 1 Taunton, 1, total, 2

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Trachoma was reported from Cambridge, 1 Lawrence, 1 Malden, 1, total, 3

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Typhoid fever was reported from Becket, 1, Boston, 5 Brookline, 1, Foxboro, 1, Worcester, 1 total, 9

Undulant fever was reported from Amherst, 1, Marlboro 1, Middleboro, 1 Newton, 1 Orange, 1, total, 5

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MONTHLY REPORT FOR MAY, 1934

Diseases	May 1934	May 1933	Average* age*
Anterior poliomyelitis	4	5	5
Chicken pox	993	1090	986
Diphtheria	45	86	184
Dog bite	843	712	648
Epidemic cerebrospinal meningitis	4	5	14
German measles	148	107	476
Gonorrhea	535	454	492
Lobar pneumonia	330	285	360
Measles	5724	2466	8653
Mumps	576	779	799
Scarlet fever	1007	1521	1395
Syphilis	405	422	334
Tuberculosis pulmonary	354	338	387
Tuberculosis other forms	39	55	56
Typhoid fever	9	14	18
Undulant fever	5	1	—
Whooping cough	1318	710	814

*Average number of cases for May during the preceding five years

A REPORT OF THE MILBANK MEMORIAL FUND

The number of physicians' calls to sick working people was cut by one-sixth during the period 1929 to 1933 while the percentage of illnesses hospitalized increased considerably during the same period, and the amount of free care both from hospitals and physicians soared to a very high point, according to a first hand census to determine the relation between sickness and the depression made jointly by the United States Public Health Service and the Milbank Memorial Fund

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Figuring on the basis of physicians' calls per thousand persons (whether sick or not), the survey shows nearly 11 per cent fewer calls in 1933 for all the families questioned than would presumably have been the case if none of them had experienced a loss of income since 1929. In other words, this is the drop in doctors' care as shown by comparing the families whose incomes dropped with those who remained on their respective wage levels. But the sickness rate among families with reduced incomes was higher than that of the families not suffering loss of income and this brought a need for more physicians' care. When this fact is taken into account, the physicians' calls actually made were 17 per cent fewer than would have been expected if the ability to purchase medical care had not been lowered. Nearly 29 per cent more hospital care per thousand persons (whether sick or not) was shown in 1933 than would have been the case if all the families had continued without reduction of income.

Along with the cut in general medical care and the increase in hospitalization went increases in the amount of free care obtained. The comparisons reveal that the families investigated in the seven cities received 49 per cent more free hospital care than they would have received if there had been no depression. About 15 per cent more free care was obtained from physicians.

An interesting fact revealed by the survey was that families whose incomes had been in the poor class since before 1929 got considerably more free care than the wage-earning families who had

dropped from higher income levels. Thus the wage earners who remained 'poor' paid for only 24 per cent of the calls made by doctors, while those who had dropped from the 'moderate' group to the 'poor' group paid for 42 per cent of the calls received and those who had been comfortable but are now 'poor' paid for a still higher proportion 46 per cent of the doctors calls which they received. Taking the new 'poor' and the 'chronic poor' all together it was found that 61 per cent of the calls made by physicians were free to the families.

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poor class than in the "comfortable" class, the rate for the former being 108 cases per 1,000 persons or slightly more than one in ten as against a corresponding figure of 80 per 1,000 persons in the comfortable class. However the poor received only 2.2 calls per illness from doctors as compared with 3.7 calls for the "comfortable." This difference in physicians care presumably arose through better ability to pay on the part of those with the higher incomes. The poor however received more hospital care per case and more care from visiting nurses than those rated as 'comfortable'.

COMPARISON OF DISEASE INCIDENCE IN CONNECTICUT WITH 1933 AND SEVEN YEAR AVERAGE

MONTH ENDING MAY 26 1934

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Chicken Pox	82	162	135	122	110	132	196	184	189
Conjunctivitis Inf.	4	4	1	—	3	—	—	—	—
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Influenza	1	—	1	1	8	4	4	3	2
Measles	126	90	156	173	235	274	305	281	226
Mumps	65	121	64	140	75	73	90	63	93
Paratyphoid Fever	2	—	—	—	—	—	—	—	1
Pneumonia (Broncho)	22	19	23	16	26	14	14	9	17
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Polio-myelitis	—	1	—	—	—	—	—	—	—
Scarlet Fever	60	70	59	57	100	106	113	112	85
Septic Sore Throat	4	3	4	—	1	3	1	2	1
Smallpox	—	—	—	—	—	—	—	—	2
Tetanus	—	1	1	—	—	—	—	—	—
Trachoma	—	—	1	—	—	2	—	—	—
Trichinosis	—	—	—	1	—	1	—	—	—
Tuberculosis (Pul.)	25	42	14	38	24	37	36	23	19
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Typhoid Fever	1	—	1	1	—	3	1	3	1
Undulant Fever	3	1	2	1	—	1	—	—	—
Whooping Cough	59	57	35	60	57	66	60	50	50
Gonorrhea	23	20	23	28	38	38	54	25	41
Syphilis	64	42	40	44	37	26	41	42	35

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Trichinosis	—	—	—	1	—	1	—	—	—
Tuberculosis (PuL)	25	42	14	38	24	37	36	23	19
Tuberculosis (O F)	4	2	—	4	3	2	3	1	3
Typhoid Fever	1	—	1	1	—	3	1	3	1
Undulant Fever	3	1	2	1	—	1	—	—	—
Whooping Cough	59	57	35	60	57	66	60	50	50
Gonorrhea	23	20	23	28	38	38	54	25	41
Syphilis	64	42	40	44	37	26	41	42	35

REMARKS: No cases of Asiatic cholera, glanders, plague or yellow fever during the past seven years.

MASSACHUSETTS DEPARTMENT OF
PUBLIC HEALTH

DIVISION OF ADULT HYGIENE

Number 14 *Cancer Clinic Bulletin* June 1, 1934

NOTES

The material presented in this month's bulletin represents the author's own conclusions regarding the subject of his article, Radiosensitivity of Tumors which first appeared in the *Archives of Surgery*, December, 1933

The article has been made easily available in monograph form. Copies may be obtained (price twenty-five cents) by addressing the American Society for the Control of Cancer, 1250 Sixth Avenue, New York City

RADIOSENSITIVITY OF TUMORS

BY FRED W STEWART, M.D

Conclusions of the Author

"My purpose has been to emphasize the complexity of the problem of radiosensitivity. I have called attention to the difficulties of establishing hard and fast rules. I have encouraged the notion that ideas of tumor sensitivity may change with changes in radiologic technic. I have called attention to the need of expressing response to radiation in terms of dosage. Peculiarities in the behavior of certain tumor types have been noted, and differences in the responses of apparently similar tumors in different regions have been discussed. Much of the paper has unfortunately been devoted to the statement of observed facts, which are wholly unexplained. It is difficult to summarize in a few sentences material which many pages have but incompletely described, yet since some crystallization is necessary, the following brief paragraphs may serve

"1 Radiology is an active science. Ideas and methods are constantly changing. As methods change, notions of what may be expected from irradiation of tumors will also change. For example, if current ideas of radiosensitivity were derived wholly from observations made in the days when the low voltage x-rays represented the entire therapeutic armamentarium, then sensitive tumors would be rare and the field of radiology limited. Improved methods, while they alter no fundamental principles, constantly widen their applicability to the advantage of the patient with cancer.

"2 Radiosensitivity may mean rapid tumor regression, slower progressive regressions over a period of from days to weeks or slow chronic atrophy requiring months or perhaps a year for completion. Of course, the same mechanisms are not responsible for these various responses, nor do they occur in the same types of tumors. Radiosensitivity does not mean the certainty of cure by irradiation, nor does radioresistance imply that a given tumor is not curable by irradiation.

"3 Certain tumors seem to possess inherent properties of radioresistance, as witnessed, for example, in the melanomas and neurogenic tumors

"4 Radiosensitivity increases with increasing embryonal quality of the tumor cells. By embryonal quality I do not imply that all tumors of embryonal origin are equally radiosensitive, since embryonal quality I do not imply that all tumors of embryonal tumors rapidly acquire adult characteristics, for example, the complex teratomas.

"5 Radiosensitivity increases with the increasing degree of anaplasia. This rule is subject to interpretation, for not all anaplastic tumors are radiosensitive. Some are highly resistant, and unless the exact type of anaplastic tumor is specified, anaplasia may be of little significance.

"6 Radiosensitivity is always a relative property. When one states that a carcinoma of the breast, for example, is radiosensitive, one should imply that it is sensitive according to the accustomed scale of behavior of tumors of the breast and not according to the same scale of sensitivity one applies to lymphosarcoma.

"7 Tumors are apt to be more sensitive in young subjects. An anemic or cachectic person is a poor subject for radiation.

"8 Infection interferes with a normal response to radiation.

"9 Desmoplastic tumors are apt to be radioresistant.

"10 The tumor bed is of great importance. A normal tumor bed is generally favorable. Bone cartilage and fat make unfavorable mediums for reactive processes and hence for regression of the tumor. An avascular bed is unfavorable for response to radiation.

"11 Tumors, when metastatic to lymph nodes, may be more or less sensitive than the primary tumors. This phenomenon is not fully explained. Metastases to the lymph nodes, long established, tend to be less sensitive than recent emboli. The old metastasis has had time to acquire its definitive blood supply and to adapt itself to its new surroundings, while the recent embolus is still foreign to its new soil. A recent, rapidly growing metastasis is more apt to be unstable than a smaller metastasis of longer duration. Cystic nodes are apt to be resistant.

"12 Bulky tumors may become resistant after infarction and liquefaction, even though they belong to the usually sensitive types. This may be due to the fact that fibrosis proceeds slowly and inefficiently under such conditions. The cells in the liquefied areas are removed from restraining fibrosis. The same explanation may be applied to the resistance of tumor cells lying in the midst of degenerative or secretory mucin, for example in gelatinous carcinomas, mucinous ovarian adenocystomas, degenerating chondroblastic tumors or Schneiderian cancer with an overproduction of mucus. Secretion, however, is the expression of the assumption of adult character in a tumor cell and hence must supposedly render it more resistant.

"13 The anatomic characteristics are of decided

importance Among these may be mentioned the papillary character, delicacy of the blood supply and enclosure within a firm capsule, which may result in the obliteration of circulation after irradiation has caused the tumor to become edematous. Diffuse lymphatic plugging by tumor cells may lead to edema and interference with cell fluid exchanges.

14 In the case of certain tumors some unknown physiologic mechanism seems involved in the response to radiation. Examples of this appear in myoma uteri and carcinomas of the breast, ovary and thyroid.

15 The effect of radiation is always complex. It involves not only the tumor cell, but the tissues of the host, and possibly general reactions on the part of the host. The ultimate effect of the radiation must always result from a nice balance between tumor effect and response of the host tissue.

The relative importance of the two mechanisms varies in different tumors. In some instances the known sensitivity is such that the radiologist may endeavor to destroy the tumor cells. In others he can but hope for restraint of growth by moderately affecting the tumor cell and trusting that the responses of the host tissue will play a decided rôle. Under such circumstances tumor cells may remain in an indolent state in the midst of fibrous tissue for many years without giving rise to further damage.

16 Unfortunately more particularly in the case of the extremely sensitive tumors the radiologist is apt to be so impressed with the initial regression of the disease that he fails to push his treatment to tolerance and waits until, after a period of quiescence, the disease recurs in a more resistant form when he must essay to do under poorer conditions what he failed to do at the start."

HISTORICAL SKETCHES ON PUBLIC HEALTH PREPARED FOR THE MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH AND SPONSORED BY THE MASSACHUSETTS MEDICAL SOCIETY

VACCINATION OF TODAY

BY ELEANOR J. MACDONALD, A.B.*

It is hard for those of us who live in such a community as is the Massachusetts of to-day, to imagine the havoc wrought by smallpox in the past. This disease which in its virulent form may kill as high as one out of every four that it attacks exerted a tremendous influence on the civilization of former centuries. So rarely did a person escape the disease that it was said with some justice, that no one should count a family until all of the children had had smallpox. Lord Macaulay in his History of England, writing of the time of William and Mary, makes this interesting comment: That disease over which science has since achieved a succession of glorious

and beneficent victories, was then the most terrible of all the ministers of death. The havoc of the plague had been far more rapid but the plague had visited our shores only once or twice within living memory and the smallpox was always present, filling the churchyard with corpses, tormenting with constant fears all whom it had not yet stricken, leaving on those whose lives it spared the hideous traces of its power, turning the babe into a changeling at which the mother shuddered, and making the eyes and cheeks of the betrothed maiden objects of horror to the lover.

In 1720 in Boston, 10 per cent of the population was killed by smallpox in one year. In 1933 there was not a single case of smallpox in Massachusetts. The intervening history has contained much that was detrimental and deterrent to the present state of smallpox. At first those who opposed vaccination had grotesque pictures displayed portraying the development of horns and hoofs on those who had submitted. These pictures appeared not in jest, but as the sincere convictions of those who foresaw in vaccination all sorts of imaginary dangers. Time has shown the fallacy of such notions, yet many of the quotations being used today as arguments against vaccination originated in this epoch.

The vaccinations that were performed in the troublous times of Dr. Waterhouse were made directly from the arm of one person to the arm of another. Those were the days before we had acquired our present-day knowledge of aseptic precautions. With such a procedure of transfer from one person to another commonly without adequate knowledge of the disease or even several diseases from which the original person might be suffering, it was to be expected that occasional ill effects should occur. Sanitary precautions were ignored in the various steps leading to and including vaccination. The fear of smallpox was so great that frequently the doctor was not content with a single vaccination, but applied several in different parts of the body to insure a higher level of resistance.

During the second half of the last century and especially during the twentieth century there have been great strides made in the method of vaccination. The development of our knowledge of bacteriology and the discoveries resulting from the scientific studies made of the subject are responsible for this. No longer is the vaccine introduced directly from the arm of one person to the arm of another. All the material is carefully produced in well supervised laboratories under precautions which would do credit to the operating room of any hospital. The material is carefully tested and standardized and before release is further tested by the Federal Government. It is placed in sealed tubes under the most careful precautions and these tubes are kept sealed until opened by the physician who is to vaccinate. No longer do we see the severe and usually painful scratching at the point where the vaccine is to be

*Statistician, Division of Adult Hygiene, Massachusetts Department of Public Health.

introduced A successful vaccination can be performed by so slight a pricking of the skin with a sterile needle as not even to draw blood

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The results of vaccination have been so striking that they need little if any, comment Massachusetts, which enjoys the protection of a law requiring vaccination of children attending the public schools, has the lowest smallpox rate of any state in the Union Those states that do not have compulsory vaccination have from twenty to two hundred cases of smallpox for every case that occurs in Massachusetts

A group of states which have laws that forbid compulsory vaccination have 115 cases of smallpox for every case that Massachusetts has, and yet there are those who, like the fear-ridden or uninformed of the eighteenth century, would amend our laws and place us in the position of having 115 times as much smallpox as we now have This they do while impugning the integrity of those who defend vaccination on its proved merits This they do by defaming those who have given so unsparingly of their time and energies to the perfection of this life-saving procedure and to support their arguments they quote from the untoward results leading to the comparatively few deaths from inoculation in the past centuries Just so long as Massachusetts continues to enjoy compulsory vaccination will it also enjoy its freedom from smallpox If, however, the compulsory vaccination law is withdrawn, then the penalty of increased suffering and death from smallpox, now the lot of other states who have followed false prophets, will become the lot of Massachusetts It is unlikely that such a condition will ever exist here, however Because in spite of the vigorous propaganda carried on by the opponents of scientific medicine, the public at large realizes to-day the debt of gratitude that it owes to Dr Jenner and respects his memory for the contribution that he made

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CORRESPONDENCE

POSTGRADUATE COURSES

TUFTS COLLEGE MEDICAL SCHOOL
416 Huntington Avenue Boston Mass

Office of the Dean, June 21 1934

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Similar courses may be made available at the Boston Dispensary and the Boston City Hospital during August if applicants therefor are interested It is possible that many of the clinical facilities of Tufts Medical School could be placed at the disposal of practicing physicians in New England and it is the desire of the School to thus utilize them whenever suitable

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Very truly yours

A WARREN STEARNS, M D, Dean

PRE-PARALYTIC INFANTILE PARALYSIS SERVICE

THE COMMONWEALTH OF MASSACHUSETTS

Department of Public Health

State House Boston, June 20 1934

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May I announce through your columns that beginning July 1, 1934 the Department will resume twenty-four hour telephone service to enable physicians to obtain consultant service in cases of suspected pre-paralytic infantile paralysis All calls during office hours should be made directly to the State House, Capitol 4600 at other hours all such calls will be handled through Kenmore 8100

It is the purpose of this consultant service to assist physicians in suspected pre-paralytic cases in which serum treatment may depend upon prompt diagnosis The Department, cannot, however, offer any such service in paralyzed cases and will be forced to refuse to send a consultant in such instances As for the past two years serum may be obtained directly from certain local hospitals, providing a lumbar puncture has already been performed and examination of the fluid shows indications of infantile paralysis

Very truly yours

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THE AMERICAN NEISSERIAN MEDICAL SOCIETY

Boston June 20 1934

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A group of physicians from various sections of the country met together at Cleveland Ohio on June 12 1934 and formed an organization for the purpose of doing on a national scale the work

rted in 1930 by the Neisserian Medical Society, Massachusetts. The name of the organization is the American Neisserian Medical Society. The following officers were elected: Dr J. Deane Barney of Boston, president; Dr P. S. Pelouze of Philadelphia, vice-president; and the undersigned, secretary.

Membership is limited to neurologists and gynecologists especially interested in and who desire to work for improvement in the management of gonorrhea.

The Massachusetts Society will continue to function as an independent organization but will cooperate in every possible way with the National Society.

Very truly yours,
OSCAR F. COX, JR., M.D.

THE PERIODIC HEALTH EXAMINATION

Editor *New England Journal of Medicine*

Having been interested for some years in the principle of periodic health examinations and having come to believe that the principle is sound, I read with interest the opinions published on this subject by the Committee on Public Health of the Massachusetts Medical Society.* The Committee says in its concluding paragraph that 'universal investigation of recently acquired trivial signs and symptoms by the family doctor would be more profitable than the periodic health examination.'

This may be true, but the proposal has serious disadvantages. First, few actively occupied persons can be induced to consult a physician for symptoms which, to them, appear trivial. Secondly, those having neurotic tendencies would inevitably be stimulated to watch their symptoms still more closely and, finally, if the plan were followed generally, much additional expense would be incurred for needless visits to the physicians.

On the other hand, it is certainly the duty of the family physician in the present and in the future to do far more toward the promotion of health in the positive sense and toward the prevention of disease than has been customary in the past. The periodic examination conducted intelligently by the family physician who knows the background of the patient's life and who understands his personality should offer valuable opportunities which would otherwise be missed. For example, dangerous diseases such as pulmonary tuberculosis, incipient circulatory weakness, ulcer of the stomach, and cancer might be detected earlier. Maladjustments too which have begun to cause neurosis or which are laying the foundation for a nervous breakdown could be promptly recognized, and persons of middle age should be cautioned about overweight. These are but a few examples of what might be accomplished. I believe that periodic examinations made by the family

physician are more likely to be useful than those performed by persons who do not really know the people whom they examine.

No plan of medical supervision that can be devised now will detect all cases of internal cancer in an early stage or prevent certain other dangerous diseases which we do not know how to prevent. But should the periodic examination, therefore, be condemned?

Most of us have long since become accustomed to see our dentist frequently in order that small cavities may receive prompt attention. The practice is becoming general of consulting the pediatricist about the growing child even when all seems well with it. Moreover, public school children are being examined at regular intervals and many universities have undertaken periodic examinations of their student body. If these things are worth while, should we not continue to make medical checkups during the later years of adult life? There is no period of life during which health may not be jeopardized. The active working years bring increased responsibility for the welfare of others, and render positive health of the greatest importance. Is this the time to give up medical supervision?

As for the examination itself, a simple routine should be carried through at every examination and this need be supplemented only when there are indications for so doing. The expense to the patient would then, usually, be small. For those who have shown no serious signs or symptoms, an annual examination would be reasonably adequate. The physician, however, should use his best judgment in every case and should advise certain patients to return at shorter intervals.

The periodic examination has certain great advantages for the patient. It enables him without loss of self-respect to consult his physician about apparently trivial symptoms of which he would be ashamed to complain, and the advice given should, frequently, enable him to improve his health and thus to increase his efficiency and enjoyment of life.

Should the principle of the periodic examination receive general acceptance by the medical profession, it would become necessary to convince the public of the value of this procedure. The public should be told the limitations as well as the advantages of the plan, but should organized medicine undertake to initiate the plan, it would lay itself open to the suspicion of advocating it to increase business. For the same reason, it might at first be embarrassing for the family physician to advocate periodic examinations. Therefore, the potential value of the periodic examination should first be explained to the public by official health agencies and by lay groups which are interested in the promotion of health. Medical societies and physicians who believe in the value of such examinations should then help to popularize the movement.

GEORGE CHEEVER SHATTUCK, M.D.

*The Periodic Health Examination. *New Eng. J. Med.* 210: 39 (Jan. 20) 1934.

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A group of states which have laws that forbid compulsory vaccination have 115 cases of smallpox for every case that Massachusetts has, and yet there are those who, like the fear-ridden or uninformed of the eighteenth century, would amend our laws and place us in the position of having 115 times as much smallpox as we now have This they do while impugning the integrity of those who defend vaccination on its proved merits This they do by defaming those who have given so unsparingly of their time and energies to the perfection of this life-saving procedure and to support their arguments they quote from the untoward results leading to the comparatively few deaths from inoculation in the past centuries Just so long as Massachusetts continues to enjoy compulsory vaccination will it also enjoy its freedom from smallpox If, however, the compulsory vaccination law is withdrawn, then the penalty of increased suffering and death from smallpox now the lot of other states who have followed false prophets, will become the lot of Massachusetts It is unlikely that such a condition will ever exist here, however Because in spite of the vigorous propaganda carried on by the opponents of scientific medicine, the public at large realizes today the debt of gratitude that it owes to Dr Jenner and respects his memory for the contribution that he made

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ARTICLES ACCEPTED BY THE AMERICAN MEDICAL ASSOCIATION COUNCIL ON PHARMACY AND CHEMISTRY

535 North Dearborn Street, Chicago, Ill.,
May 31, 1934

Managing Editor,

The New England Journal of Medicine,

Dear Doctor

In addition to the articles enumerated in our letter of April 30 the following have been accepted

Bilhuber Knoll Corporation

Dilaudid

Ampules Solution Dilaudid, 2 mg (1/32 grain), 11 cc.

Hypodermic Tablets Dilaudid, 2 mg (1/32 grain)

Hypodermic Tablets Dilaudid, 3 2 mg (1/20 grain)

Hypodermic Tablets Dilaudid, 4 mg (1/16 grain)

Tablets Dilaudid, 2 5 mg (1/24 grain)

H E Dubin Laboratories, Inc

Aminophyllin—Dubin

Ampules Solution Aminophyllin—Dubin,
0 24 Gm., 10 cc.

Ampules Solution Aminophyllin—Dubin,
0 48 Gm., 2 cc

Suppositories Aminophyllin — Dubin, 0 36 Gm.

Tablets Aminophyllin—Dubin, 0 1 Gm

Gilliland Laboratories, Inc

Diphtheria Toxoid, Alum Precipitated (Refined)

Schering & Glatz, Inc

Medinal

Medinal Tablets, 5 grs

Medinal Suppositories, 10 grs

Frederick Stearns & Co

Neo-Synephrin Hydrochloride

Solution Neo-Synephrin Hydrochloride, 0 25 Per Cent

Solution Neo-Synephrin Hydrochloride, 1 Per Cent

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Yours sincerely,

PAUL NICHOLAS LEECH *Secretary,*
Council on Pharmacy and Chemistry

OBITUARY

DR ABNER POST

1844—1934

Abner Post was born in Westfield Massachusetts, August 9 1844 He died in Cambridge, Massachusetts, April 20, 1934 At the age of twelve his father died and the boy with his mother, went to live with her father Those early years, spent in his grandfather's household, made a lasting impression on his character

He prepared for College at Williston Academy, and graduated from Yale in 1866, and received his M D from Harvard four years later He served as a surgical house pupil at the Massachusetts General Hospital under Doctors Richard Manning Hodges and Henry J Bigelow He studied abroad for two years mostly in Vienna, and on his return to Boston entered the U S Marine Hospital at Chelsea, where he gained a wide experience in the treatment of venereal diseases as well as general medical and surgical work

In 1876 he was appointed to the Staff of the Boston Dispensary and continued on active duty there until he retired December 31 1913

Dr Post had great interest in Surgery and would doubtless have devoted his life to this field had he not yielded to the influence of Dr Francis B Greenough a dermatologist and syphilographer of note with whom he became associated at the Dispensary, and who revived his interest in syphilis In consequence he gave up his position as surgeon at the Childrens Hospital, which he had held for six years

Dr Post enjoyed clinical teaching and his service at the Dispensary gave him a large and varied amount of material for his demonstrations of syphilis There are doubtless many who now remember his twelve o'clock clinic in the old building at the Dispensary He always cautioned against overlooking extragenital non venereal infections of syphilis, and emphasized the importance of early recognition of such conditions

He was greatly interested in children with congenital syphilis This led him to study and record syphilitic families at a time when many doctors were simply treating the individual patient, without attempting to ascertain whether other members of the family had become infected

Dr Post was one of the first to make use of the x ray in studying syphilis of bones, joints and lungs He was an early advocate of the use of arsphenamine in the treatment of pregnant syphilitic women and their offspring

His interest in the early diagnosis and treatment of interstitial keratitis and symmetrical synovitis did much to conserve the eyesight and improve the health of these unfortunate children.

Dr Post began teaching in the Harvard Medical School in 1882 and continued until 1916, when he resigned as Professor of Syphilis and became an

MORBIDITY REPORT OF VENEREAL DISEASES

TREASURY DEPARTMENT, PUBLIC HEALTH SERVICE,
WASHINGTON

June 12, 1934

Managing Editor, *New England Journal of Medicine*,

Your attention is invited to the accompanying morbidity report of the venereal diseases for the month of April, 1934. This statement is prepared monthly by the Public Health Service and, because of the widespread prevalence of the venereal diseases, is of much importance to physicians and other individuals interested in the prevention and eradication of syphilis and gonorrhea. It is possible that you may find this statement of sufficient significance to publish it in your *Journal* regularly. A copy will be mailed to you in the future each month.

It is hoped that by releasing this statement, the Public Health Service may assist the State and local boards of health in interesting the individual physicians of the United States in the more thorough reporting of the venereal diseases. The present trend is to neglect the submission of such morbidity reports, yet the extensiveness of venereal disease prevalence can never be ascertained without the thorough cooperation and assistance of all of the physicians of the country. It is hoped that the publication of the morbidity reports by States may stimulate a spirit of friendly rivalry among physicians and health officers responsible for this activity.

Respectfully,

H. S. CUMMINGS, *Surgeon General*

The appended report presents the statistical evidence

HEALTH OFFICERS' MONTHLY STATEMENT OF
VENEREAL DISEASES REPORTED

April, 1934

This statement is issued monthly for the information of health officers in order to furnish current data as to the prevalence of the venereal diseases. The following reports were received from State Health Officers. The figures are preliminary and subject to correction. It is hoped that this will stimulate more complete reporting of these diseases.

State	Syphilis		Gonorrhea	
	Cases reported during month	Monthly case rates per 10,000 population	Cases reported during month	Monthly case rates per 10,000 population
Alabama	320	1.19	85	0.32
Arizona	22	.49	131	2.89
Arkansas	537	2.87	221	1.18

California (b)				
Colorado (a)	—	—	—	—
Connecticut (c)	224	1.36	96	.58
Delaware	90	3.73	52	2.16
Dist. of Columbia	148	2.99	89	1.80
Florida	302	1.94	50	.32
Georgia	563	1.93	337	1.16
Idaho	0	—	0	—
Illinois	1894	2.42	1293	1.65
Indiana	146	.44	130	.40
Iowa (c)	117	.47	131	.53
Kansas	129	.68	63	.33
Kentucky	192	.73	303	1.14
Louisiana	209	.97	136	.63
Maine	42	.52	49	.61
Maryland	663	3.99	263	1.58
Massachusetts	389	.90	431	1.00
Michigan	483	.96	344	.68
Minnesota	379	1.46	304	1.17
Mississippi	1056	5.16	1501	7.33
Missouri	628	1.70	300	.82
Montana (c)	52	.97	13	.24
Nebraska	43	.31	57	.41
Nevada (a)	—	—	—	—
New Hampshire	14	.30	14	.30
New Jersey	691	1.65	219	.52
New Mexico	76	1.75	25	.58
New York	4855	3.74	1139	.88
North Carolina	987	3.01	280	.85
North Dakota	27	.39	40	.58
Ohio (c)	599	.88	229	.34
Oklahoma (c)	134	.64	101	.48
Oregon	19	.19	59	.60
Pennsylvania (b)				
Rhode Island	45	.64	47	.67
South Carolina (c)	403	2.31	502	2.87
South Dakota	2	.03	17	.24
Tennessee	1180	4.43	431	1.62
Texas	153	.25	27	.04
Utah (a)	—	—	—	—
Vermont	19	.53	18	.50
Virginia	357	1.46	233	.95
Washington	160	1.00	194	1.21
West Virginia (b)	—	—	—	—
Wisconsin (d)	33	.11	157	.52
Wyoming (a)	—	—	—	—
Total	18377	1.74	10111	0.96

(a) Not reporting

(b) Have been reporting regularly but no report received for current month

(c) Incomplete

(d) Only cases of syphilis in the infectious stage are reported.

Surveys in which all medical sources have been contacted in representative communities throughout the United States have revealed that the monthly rate per 10,000 population is 6.6 for syphilis and 10.2 for gonorrhea.

August 18 - September 30—Medical Study Trip to Hungary See page 975 issue of May 10

September 3-6—American Public Health Association at Pasadena, California Dr J D Dunshee Chairman Local Committee on Arrangements

September 4, 5, 6—International Union Against Tuberculosis For information address the National Tuberculosis Association 450 Seventh Avenue New York City

September 10, 11, 12, and 13—American Congress on Physical Therapy will meet in Philadelphia at the Bellevue Stratford. For details write American Congress of Physical Therapy 30 North Michigan Avenue Chicago Illinois

September 10-15—First International Congress of Electro-Radio-Biology will be held in the Doges Palace at Venice For details address the General Secretary of the Congress Dr Giocondo Protti, S Gregorio 173 Venice (Italy)

September 27 and 28—International Association for Preventive Pediatrics will be held at Lyons For details address the Secretary of the I A P P 15 rue Lévrier Geneva (Switzerland)

September 28-29—New England Surgical Society will meet at Burlington, Vermont For details address the Secretary Dr John M Birnie 14 Chestnut Street Springfield, Mass

October 22 November 2—1934 Graduate Fortnight of the New York Academy of Medicine See page 1240 issue of June 7

October 31 - November 2—Massachusetts State Nurses Association, Hotel Statler Boston For information write Miss Helene G Lee R.N. 420 Boylston Street Boston

April 29 May 3, 1935—The American College of Physicians will meet in Philadelphia For information address Mr E. R. Loveland Executive Secretary 133-135 South 36th Street, Philadelphia Pa

June 1935—Medical Librarian Association will meet in Rochester N Y For details address the Secretary Miss Frances A Whitman Librarian Harvard University Schools of Medicine and Public Health Boston Mass

BOOK REVIEWS

Aids to Pathological Technique By David H Haler
Students Aids Series 167 pp Baltimore William Wood and Company \$1.50

This small handbook of laboratory methods is concise in fact almost too concise to be of real service. For a quick review of laboratory subjects it has advantages. The methods recommended are somewhat different from those in common use in some of the laboratories in this country. In general it has more of the character of a sketchy quiz-compend than an adequate presentation of the subject and is certainly not to be recommended for the practitioner or laboratory worker.

Physiopathologie des Syndromes Endocriniens By Noël Flessinger 312 pp Paris Masson et Cie 40 fr

The reviewer read this book several months ago and put it aside to reread because he thought he was in a bad humor. As a result the review is late.

This book is an interesting attempt to approach clinical medicine from the physiological aspect. This excellent approach however is injured by loose statements both in regard to the laboratory work and the clinic. One reads an interesting account of disease and then one comes upon a statement which is obviously questionable. The names of authors are frequently referred to but there are no references given in the book so that there is the aspect of authority but yet no way of confirming statements by original evidence. From the re-

viewer's point of view this is a great handicap. The book has the excellent French characteristic of good clinical descriptions.

Synopsis of Obstetrics and Gynecology By Aleck W Bourne Fifth Edition 439 pp Baltimore William Wood and Company \$5.25

This book is fashioned after the manner of the quiz compends that have been published in this country for some years. For a hurried review of the subject it may be satisfactory but for any real student of obstetrics and gynecology this book is of no avail. It contains many statements with which American obstetricians do not agree, and much of the technique is not that which we follow in this country.

Aids to Qualitative Inorganic Analysis By R G Austin Students Aids Series 204 pp Baltimore William Wood and Company \$1.50

This miniature laboratory guide is apparently serviceable for the student of elementary chemistry. It is accurate so far as it goes, and may be useful for some one attempting to review chemistry for a basic science examination.

You Must Relax A Practical Method of Reducing the Strains of Modern Living By Edmund Jacobson. 201 pp New York and London Whittlesey House, McGraw Hill Book Company \$1.50

Some years ago this author wrote a more formal book on 'Progressive Relaxation' which contained much of value in regard to the physiology of the neuromuscular mechanism. He has now attempted, with much less success to write a small popular treatise on the same condition with the implication that muscular relaxation is a valuable adjunct to our therapy for conditions such as insomnia, colitis and hypertension. While much of the theory behind this little book is correct, one feels that its value is likely to be over-emphasized by the average reader. We talk about the strain of modern living but do we actually know how much this has to do with the psychoneuroses and hypertension? Is not the author basing his conclusions in regard to relaxation as a practical method of reducing neuromuscular tension on somewhat uncertain premises?

The Single Woman A Medical Study in Sex Education By Robert Latou Dickinson and Lura Beam 469 pp Baltimore The William & Wilkins Company

This book is the second volume of a series of case studies of which the first was entitled 'A Thousand Marriages'. With its avowed purpose—an inquiry into the sex life of the single woman

in the interests of sex education particularly with a view to marriage—your reviewer is in hearty accord. Whether this particular volume has accomplished its purpose and justified its publication is

Emeritus At the time of his death, he was the oldest member of the Harvard Faculty

In 1882 he was appointed on the Surgical Staff of the Boston City Hospital and rose to the rank of Senior Visiting Surgeon in 1897, resigning in 1906. As a surgeon he was resourceful, skillful and conservative. The good of the patient was always his objective. If unusual conditions demanded original procedures, his courage was never lacking. He performed oesophagotomy on a child for the removal of a silver twenty-five cent piece. The operation was successful.

In 1884, while Surgeon to Out Patients, Dr Post performed the first successful "bloodless operation" for the congenital dislocation of the hip joint. The patient was a girl of seven years. Recovery was complete, after wearing a plaster of Paris cast for about seven months, and the patient walked without a limp. It was nearly twenty years later that so much publicity was given Professor Lorenz of Vienna, when he carried out the same procedure on a little girl in New York City.

Dr Post took great interest in the training and welfare of his internes. He was at his best in teaching small groups. In 1894 he began the Thursday evening clinical meetings, held monthly for the Staff and former internes. This was one of the earliest, if not the beginning of such hospital meetings. For several years he gracefully presided at these carefully arranged and well-attended exercises. In 1907 he was appointed honorary consulting surgeon, which position he held at the time of his death.

He was appointed Consulting Physician in Syphilis at the Massachusetts General Hospital and for two years continued to teach Harvard Medical students in the newly created department for the care of all forms of syphilis. In this clinic, he and the late Dr George S. Derby studied the effect of arsphenamine treatment of interstitial keratitis as measured by vision tests. Dr Derby reported the results and conclusions on this group of cases in an article published in the *Ophthalmic Record* in 1917.

Dr Post was an Associate Editor of the *Boston Medical and Surgical Journal* from 1881 to 1890. His principal contributions to medical literature were in the fields of Surgery and Syphilology. His papers were carefully prepared, concise and convincing. He felt very strongly that from a medical standpoint syphilis should be looked upon as a chronic contagious disease rather than as a sex problem or social disease and should be treated as such.

As a public health measure he endeavored to locate, if possible, the source of infection and subsequent contacts and bring them under treatment. He was one of the first to appreciate the value of a social service worker in the clinic.

Dr Post's Clubs were the St. Botolph Yale Harvard and the Old University Club.

His membership in medical societies included the American Dermatological Association (of which he was one time president), American Medical Association, American Urological Association, Massachu-

setts Medical Society, New England Dermatological Society and other local medical societies.

He was a lover of nature, of flowers and of animals and for many years spent long seasons at his farm in Weston, Massachusetts. When he retired from practice he made his winter home in Cambridge. In spite of physical infirmities, incident to age, he retained his mental vigor enabling him to enjoy his family, his friends and his books until within a short time of his death.

RECENT DEATHS

DROWN—Miss LUCY LINCOLN DROWN, who served the Boston City Hospital first as a nurse, and later as Superintendent of Nurses for more than twenty-five years, died in Lowell, Massachusetts, June 22, 1934.

She retired in 1910 and will be long remembered as an important factor in the development of the training school for nurses at the City Hospital.

HEALY—DANIEL LAURENCE HEALY, M.D. of Framingham, Massachusetts, died at his home June 21, 1934.

He was born in Somerville in 1872, was educated at Boston College and graduated in medicine from the Harvard University Medical School in 1898, and had practiced in Framingham since that date. He had served as school physician. He joined the Massachusetts Medical Society in 1901, and served on the staffs of the Framingham and Natick Hospitals.

He is survived by his widow, Katherine G. Healy, two sons, Daniel J. and James Healy, five brothers, and five sisters.

LYMAN—HENRY LYMAN, M.D., a retired physician, died in Ponkapoag June 15, 1934. He was born in 1879, and graduated from the Harvard Medical School in 1912. He joined the Massachusetts Medical Society in 1914.

He was interested in farming and was a member of many social clubs. He is survived by his widow, Elizabeth (Cabot) Lyman and three children.

NOTICE

CORRECTION

In our issue of June 14, page 1298, there appeared an item stating that Dr. Moses Kaufmann had been elected to membership in the American Psychiatric Association at the meeting held in New York City in May 1934. The item should have read that Dr. Kaufman had been elected to Fellowship since he has been a member for five years.

SOCIETY MEETINGS, CONGRESSES AND CONFERENCES

July 24-31—The IVth International Congress of Radiology will be held in Zurich under the presidency of Professor H. R. Schnitz. General Secretary Dr. H. E. Walther, Gloriastrasse 14, Zurich.

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WALTER P. BOWERS, M.D., Managing Editor

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†Approximately 5 words to a line

open to considerable question. The general impression gained is of a mass of poorly digested and badly correlated data. This could perhaps be condoned were we satisfied that the case histories represent a fair cross section of the emotional life and experiences of normal unmarried women. It would seem, however, to be a foregone certainty that case histories from the practice of one man will not be able to fulfill these requirements. In spite of these evident shortcomings the whole could have been saved from seeming futility by some thread of critical interpretation. The question we ask ourselves is why this has not at least been attempted. The book may still have something of interest for the student of abnormal psychology, but offers little of value for the average medical man.

Wilhelm Conrad Röntgen and the Early History of the Roentgen Rays By Otto Glasser, with a chapter by Margret Boveri. 494 pp. Illinois: Charles C. Thomas. \$6.00

This book of 494 pages contains considerably more than its title implies. It is not only an excellent biography of the Great German Physicist, but is also a complete history of the early experience with roentgen rays. In this portion of the book are such interesting data as the first observation on the physiological effects of roentgen rays on the human skin, the early use of roentgen ray as a therapeutic agent and the development of the roentgen tube and intensifying screens.

There is a complete bibliography of books and pamphlets on roentgen ray published during the year 1896, and when one considers that Roentgen announced his discovery in December, 1895, one is rather amazed to find that there were 49 books or pamphlets and over 1000 articles published the following year. In this list of articles are nearly all of the subjects under discussion to-day.

The book contains a vast amount of historical data related to the roentgen ray. In establishing these facts the author has exhausted every source of information and has included the references to these data in the bibliography. The book is easy to read and well printed.

As a book of reference it should be particularly valuable to those who wish to determine priority in any therapeutic or diagnostic procedure relating to the roentgen ray.

Traité de Physiologie Normale et Pathologique
Tome V. Respiration. Publié sous la direction du
Pr G. H. Roger et du Pr Léon Binet. 474 pp.
Paris: Masson et Cie. 80 fr.

Other volumes of this work have previously been reviewed in these columns. It may be recalled that the project is to publish the data of the science in great detail and to resume the collection of material as soon as each section is issued looking toward a new edition. With more than a hundred collaborators eleven large volumes have now been published and two of these are soon to be replaced

by revisions. The present unit appears to maintain the high standard set in its predecessors. Naturally, a large proportion of the references are to French sources, this is really a strong point for the book since these are the papers among which we are most apt to miss valuable reports. The chapter by Heymans on the nervous control of breathing will be of unusual importance because of the author's far-reaching discoveries with respect to the carotid sinus. Mention may also be made of the interesting treatment of basal metabolism by Hermann and of respiration at high altitudes by Binet.

Studies from The Rockefeller Institute for Medical Research Reprints Volume 88. 621 pp. New York: The Rockefeller Institute for Medical Research, 1934.

A very wide range of subjects is presented, covering the various departments of the Institute. From the medical standpoint the papers of particular interest are those by Rhoads and Castle on the pathology of the bone marrow in sprue, on focal cell reactions in tuberculosis by Theobald Smith, and infectious papillomatosis of rabbits by R. E. Shope.

From the standpoint of the laboratory worker, the three papers by H. M. Evans dealing with prolan are of particular interest.

Birth Control in Practice Text and Tables by Marie E. Kopp. Prepared under the supervision of a scientific advisory committee. 290 pp. New York: Robert M. McBride & Company. \$3.75.

"Birth Control in Practice" is a statistical study of the first ten years' work of the Birth Control Clinical Research Bureau of New York comprising the facts obtained from an analysis of ten thousand case histories. Some idea of the scope of this study can be gained from a glance at the Table of Contents. Statistics are presented concerning patients' reasons for seeking birth control advice, their nativity and national background, education, religious affiliations, occupations, weekly income, health, age and characteristics of husband, menstrual history, marital and obstetric history, including sexual habits and reactions, reasons for being given contraceptive advice, and other factors involved in the problem. The important findings are given in a brief summary of nine pages, by reading this carefully, one will get the gist of the study.

The book is a valuable contribution to our understanding of the problems of marriage and the sexual life. As Adolf Meyer, who wrote the foreword, very wisely remarks: "To bring sex life in its positive and not only its dismal aspects into contact with safe and sane and intelligent medical experience will be a tremendous forward step beyond the haphazard and often tragic conditions of the present day." "Birth Control in Practice" will help give us a foundation of knowledge upon which we may base the treatment of those patients whose problems are related to this important phase of life.

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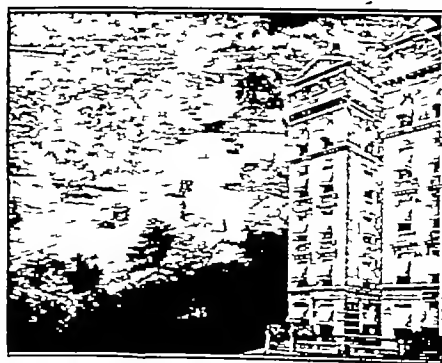
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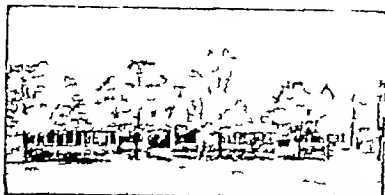
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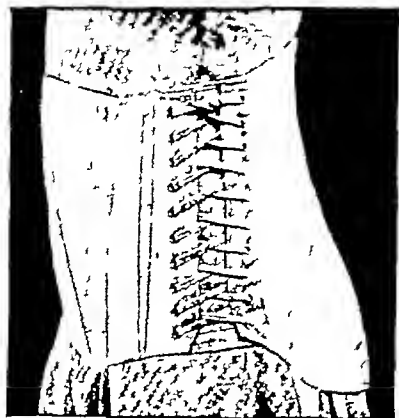
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Owned and Published by
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The New Hampshire Medical Society—The Vermont State Medical Society
The New England Surgical Society—The Boston Surgical Society, Inc
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Volume 210

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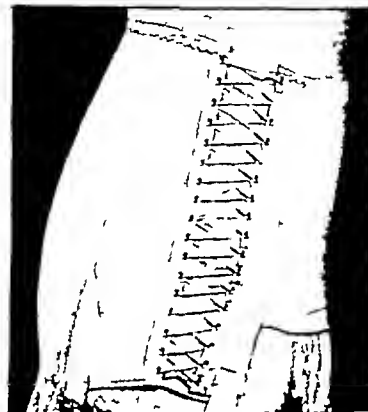
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KEY TO ABBREVIATIONS

B M L—Boston Medical Library	N—Notice
B R—Book Review	N E S S—New England Surgical Society
C—Correspondence	N E U A—New England Branch of the American
E—Editorial	Urological Association
M L N—Massachusetts Legislative Notes	N H M S—New Hampshire Medical Society
M M S—Massachusetts Medical Society	N M S M—New England Medical Society
M P—Medical Progress	of Massachusetts
M N—Meeting Notice	O—Obituary
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Misc—Miscellaneous	V S M S—Vermont State Medical Society

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